

JPRS-ULS-88-007  
15 APRIL 1988



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# ***JPRS Report***

# **Science & Technology**

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***USSR: Life Sciences***

# Science & Technology

## USSR: Life Sciences

JPRS-ULS-88-007

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15 APRIL 1988

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**Effect of Electroprocessing of Seeds and Sowing Rates on Wheat Resistance to Downy Mildew**

18900094 Leningrad MIKOLOGIYA 1

*FITOPATOLOGIYA in Russian Vol 21, No 4,*

*Jul-Aug 87 (manuscript received 21 Apr 86) pp 374-376*

[Article by V.F. Firsov, F.R. Galiyeva and M.Kh. Nazarbekova, Kazakh Agricultural Institute, Alma Ata]

[Text] Stimulation of seeds in the electric field of a corona discharge [EPCD] increases wheat yield. An attempt to demonstrate the possibility of increasing Bezostaya I wheat yield and its resistance to downy mildew by presowing processing of the seeds in an EPCD and of decreasing the sowing rate was described and discussed. Experiments were performed in 1982 to 1984 by the Gossortoset method on the "Dzhanasharskoye" training farm in Alma-Ata Oblast. Treatment of the seeds in an EPCD accelerated growth and development of the wheat plants. Appearance of shoots, tillering and

booting of the experimental plants occurred 2 or 3 days sooner and total ripeness occurred 3 or 4 days sooner than was the case for control plants. EPCD increased the weight of leaves and stems, especially that of leaves in the first phases of plant development. Reduction of the sowing rate did not decrease the weight of leaves nor stems. Downy mildew did not increase with intense formation of the leaf surface. Decrease of sowing rate of seeds processed by EPCD reduced the spread and development of downy mildew at the end of the vegetation period. The lowest incidence of the disease occurred when the sowing norm was 4.5 million seeds per hectare. Electrostimulation of the wheat seeds made it possible to reduce the sowing rate to 4.5 million seeds per hectare, to increase yield and reduce development of downy mildew from 40.6 percent to 10.8 percent. This suggests that EPCD may greatly increase the resistance of Bezostaya I wheat to downy mildew. References 4 Russian.

02791

UDC 577.112.6-612.017.1

**Kapporphin-New Opiate Peptide From Kappa-Chain of Immunoglobulin**

18400129a Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 297, No 3, Nov 87 (manuscript received 6 Apr 87) pp 740-743

[Article by Ye. P. Kharchenko, V.N. Kalikhevich, K.I. Shestak and T.V. Sokolova, Institute of Evolutionary Physiology and Biochemistry imeni I.M. Sechenov, USSR Academy of Sciences, Leningrad; Leningrad State University imeni A.A. Zhdanov]

[Abstract] The opioid activity of three newly synthesized peptides was studied. The first, Tyr-Ser-Phe-Gly-Gly, was named kapporphin, since it is found in the kappa chain of rabbit immunoglobulin. The peptide Tyr-Gly-Phe-Ile-Leu, an analogue of a sequence in carboxypeptidase A and B, was designated valentorphin, while Tyr-Gly-Phe-Gly-Gly was named historphin. Also studied was Tyr-Gly-Gly-Phe-Leu, previously called leu-enkephalin. Mouse tail pinch and hot plate tests were used to evaluate analgesia. All the peptides studied exhibited pain threshold (tail pinch) analgetic activity, with kapporphin the most potent. All showed normal dose-response relationships and all were antagonized by naloxone. The peptides did not affect reaction time, as indicated by the hot plate test, but did lower the body temperature. The functional significance of these sequences in the immunoglobulin chains could be local or global. Local effects may involve autoactivation of opiate receptor-bearing lymphocytes, mediating antibody synthesis, lymphocyte proliferation and cytotoxicity. Action via the neuroendocrine system on the whole body is also possible. The results indicate that the immune system can also serve as a source of opioid peptides, participating in the modulation of the total hormonal background of the body. Figures 1; references 14: 8 Russian, 6 Western.

12126/12913

UDC 612.815.1:577.353

**Action of Toxin From Venom of Habrobracon hebetor (Say) on Neuromuscular Transmission in Insects**

18400129b Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 297, No 2, Nov 87 (manuscript received 5 May 87) pp 492-494

[Article by T.I. Slavnova, S.M. Antonov, L.G. Magazanik, A.K. Tonkikh, A.V. Kosovskiy, A.A. Sadykov and A.A. Abduvakhabov, Institute of Bioorganic Chemistry, UzSSR Academy of Sciences, Tashkent]

[Abstract] In order to control the cotton cutworm, use is made of its natural parasite, *Habrobracon hebetor* (Say) [ichneumon fly]. Extracts of the venom glands of these entomophages elicit paralysis in the caterpillars of many

species of Lepidoptera. A toxin isolated from *H. hebetor* homogenate with a molecular weight of 18,000 daltons possesses analogous biological properties. The action of this toxin on neuromuscular transmission in insects and vertebrates was studied. Neurotoxic effects were investigated using neuromuscular preparations of frog sartorius and the musculocutaneous sac from meat fly larvae. Locust muscle was also used. At a homogenate concentration of  $5 \times 10^{-5}$  g/mL no effect was seen in frogs, while in flies the frequency of miniature elicited postsynaptic potentials was gradually reduced until complete blockage was attained. This was occasionally accompanied by a short initial increase. The isolated toxin at  $3 \times 10^{-6}$  M had no effect on frog cholinergic neuromuscular synapses, while at  $5 \times 10^{-8}$  M it significantly disturbed spontaneous and elicited release of glutamate mediator in neuromuscular synapses of flies. Toxin action was biphasic. In the initial phase, a series of spontaneous, high-amplitude postsynaptic potentials were noted, representing mediator release. Subsequently, the potentials gradually decreased with full block occurring at 80-120 minutes. Elicited potentials were shortened, smoothed out and eventually extinguished. The toxin cleaved a labeled position-two arachidonic acid from phosphatidylcholine. This property was calcium enhanced. It also inhibited both sodium-dependent and sodium-independent binding of tritiated glutamate in locusts. The data indicate that the toxin disturbs spontaneous and elicited glutamate secretion, its uptake by the nerve terminus and interaction with the post-synaptic membrane. Effects on nerve terminus function were most pronounced. Figures 2; references 11: 4 Russian, 7 Western.

12126/12913

UDC 577.213.3

**Suppression of Avian Leukosis Sarcoma Complex Diseases By 3'-Azido-3'-Deoxythymidine (AZT), Model for Screening and Study of Chemotherapeutic Agents Against Retroviral Infections**

18400128a Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 296, No 6, Oct 87 (manuscript received 13 May 87) pp 1492-1497

[Article by V.M. Kavsan, N.K. Rudenko, M.A. Shneyder, A.A. Krayevskiy and R.Sh. Bibilashvili, Institute of Molecular Biology and Genetics, UkSSR Academy of Sciences, Kiev; All-Union Scientific Research and Technological Institute of Antibiotics and Enzymes, Leningrad; Institute of Molecular Biology, USSR Academy of Sciences, Moscow; All-Union Cardiology Scientific Center, USSR Academy of Medical Sciences, Moscow]

[Abstract] Various cell-free systems, virus-infected cells and infected animals are used to screen substances for activity against retroviruses. In cell-free systems the goal is to find an inhibitor of reverse transcriptase-catalyzed



DNA synthesis which has little effect on human or mammalian DNA polymerases, such as 3'-substituted 2, 3'-dideoxynucleotide-5'-triphosphates. However, these compounds do not cross cytoplasmic membranes. Screening with virus-infected cell cultures demonstrated the activity of azidothymidine (AZT). Final demonstration of efficacy requires animals as models. In the present work, the suitability of chicks and chick embryos as models for screening antiviral agents is demonstrated. Intramuscular inoculation of avian myeloblastosis virus in day-old chicks and intracranial injection of avian erythroblastosis virus in 30-40 day chicks established the test systems. Rous sarcoma virus was maintained in 10-12 day chicks. Administration of AZT practically eliminated signs of infection or mortality in myeloblastosis, and substantially delayed and reduced them in erythroblastosis. The sensitivity of all Rous sarcoma virus serotypes to AZT, 3'-azido-3'-deoxyarabinothymidine, 3'-acetamido-3'-deoxythymidine and 3'-azido-3'-deoxyadenosine was also demonstrated in chicks. The second compound was much less active than the other three. The results indicate that AZT effectively blocks the replication of avian retroviruses, preventing disease development. Chicks and chick embryos, infected with retroviruses, are a simple, informative model for rapid evaluation of the therapeutic effectiveness of potential drugs for treating retrovirus-induced diseases. (Figures 3; references 14: 7 Russian, 7 Western).

12126/12913

UDC 615.451.234.015.44

#### Phagocytosis of Fibronectin-Coated Liposomes By Macrophages

18400128b Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 297, No 1, Nov 87 (manuscript received 2 Mar 87) pp 219-221

[Article by S.A. Burkhanov, Ye. Ye. Yefremov, A.L. Klivanov, A.N. Lukyanov, I.N. Trakht, V.E. Kotelyanskiy, G.A. Yermolin and V.P. Torchilin, All-Union Cardiological Scientific Center, USSR Academy of Medical Sciences, Moscow]

[Abstract] In order to study the activation of macrophage recognition and destruction of transformed cells, the ability of macrophages to capture liposomes coated with fibronectin vesicles was investigated. Dithiopropionyl phosphatidylethanolamine was used to bind the fibronectin to the liposomes. Liposomes were prepared from yolk lecithin and cholesterol in a 7:3 mole ratio and were labeled with  $^{14}\text{C}$ -cholesteryl oleate. The results obtained demonstrate that fibronectin-coated liposomes were captured significantly more rapidly than unmodified liposomes, or liposomes coated with bovine serum albumin. Capture was linear for 60 minutes, then began to slow. Use of the inhibitors iodacetamine and cytochalasin B demonstrated that fibronectin increases liposome

endocytosis. Fibronectin-coated liposomes are recommended as a transfer agent for effective delivery of biologically active substances into macrophages.

12126/12913

UDC 577.15+541.182

#### Enzymatic Catalysis in Colloidal Solution of Glycerin in Organic Solvent

18400128c Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 297, No 2, Nov 87 (manuscript received 5 Feb 87) pp 483-487

[Article by N.L. Klyachko, N.G. Bogdanova, A.V. Levashov, A.V. Kabanov, A.V. Pshezhetskiy, Yu. L. Khmel'nitskiy, K. Martinek and I.V. Berezin, deceased corresponding member, USSR Academy of Sciences, Moscow State University imeni M.V. Lomonosov; Institute of Biochemistry imeni A.N. Bakh, USSR Academy of Sciences, Moscow; Institute of Organic Chemistry and Biochemistry, Czechoslovakian Academy of Sciences, Prague]

[Abstract] A colloidal solution of water in organic solvents is widely used as a medium for enzymatic reactions. Such a system is advantageous both in basic and applied enzymology, particularly in analysis and precision synthesis of water-insoluble compounds and shifting equilibria towards valuable products. It is often necessary to substantially alter the water content of the colloid while maintaining the catalytic activity of the solubilized enzyme. One may decrease the degree of hydration of the micelle-forming surfactant or dilute the system while maintaining optimum hydration. However, both methods decrease catalytic effectiveness. A new method, involving replacement of the water surrounding the enzyme with a water-glycerin mixture, which does not inhibit many enzymes, is described. Octane-solubilized glycerin, Aerosol OT and alpha-chymotrypsin were used to evaluate this method. The presence of glycerin significantly altered the dependence of catalytic activity on degree of surfactant hydration, shifting it toward "drier" micelles and increasing the maximum rate of enzyme reaction. Maximum catalytic activity is observed when the geometric dimensions of the enzyme globule correspond closely to those of the micelle internal cavity. At the lowest water content achieved, 6 percent, the optimal ratio of glycerin to surfactant was about 0.8, corresponding to literature reports of an optimum fit between enzyme and micelle. The enhanced catalytic activity is a result of decreased conformational mobility in the protein. Figures 2; references 15: 4 Russian, 11 Western.

12126/12913

UDC 577.1+612.3+541.5

**N-Hydroxytetramethylpiperidines as Bioantioxidants**

18400128d Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 297, No 3, Nov 87 (manuscript received 7 Apr 87)  
pp 734-737

[Article by P.G. Komarov, O.N. Taskayeva and R.I. Zhdanov, All-Union Scientific Research Institute of Biotechnology, Moscow]

[Abstract] 2,2,6,6-Tetramethylpiperidine and its nitroxyl radical are widely used as antioxidants. In order to characterize sterically hindered hydroxylamines as a new group of bioantioxidants, the properties of several 1-hydroxytetramethylpiperidines were studied. These compounds were shown to be effective in peroxide oxidation of lipids, in liver endoplasmic reticulum preparations and in thrombocyte membrane preservation. The concentration at which 100 percent inhibition of NADPH-dependent lipid microsomal oxidation was observed was  $10^{-2}$  M for the 4-diethylsulfoxide derivative,  $10^{-3}$  M for its nitroxyl radical,  $10^{-2}$  M for the 4-di(p-propylsulfide) derivative and  $10^{-5}$  M for its nitroxyl radical. The hydroxylamine derivatives were stronger antioxidants than the parent amines, with the p-propylsulfide nitroxyl compound also stronger than ionol. Inhibition of spontaneous peroxide lipid oxidation and preservation of cytochrome P-450 were analogous. The p-propylsulfide nitroxyl piperidine decreased the accumulation of 2-thiobarbituric acid active products, in a similar manner to ionol. The results obtained correlated

with the effects observed on thrombocyte aggregation. The data indicates that sterically hindered hydroxylamines are promising antioxidants. Figures 3; references 15: 7 Russian, 8 Western.

12126/12913

**Structural Properties of Adsorption Layer of Albumin on Hemosorbent Surface**

18400095 Moscow KOLLOIDNYY ZHURNAL in Russian Vol 49 No 5 Sep-Oct 87 (manuscript received 16 Jul 85) pp 949-954

[Article by V.L. Sigal and P.V. Osadchiy, Institute of Problems of Oncology imeni R.Ye. Kavetskiy, USSR Academy of Sciences, Kiev]

[Text] A study of adsorption of serum albumin on activated carbon particles used for sorption purification of blood was described and discussed. Properties of forming adsorption layers were studied by viscometric and electrophoretic methods. Possibilities of practical use of adsorption studies of these methods were critically discussed. The geometric disposition of protein molecules in the adsorption layer was determined and discussed. An interpretation of the microelectrophoretic experiment was proposed. The interpretation permits quantitative examination of the structural aspect of adsorption of the albumin on the surface of solid bodies. Combined use of viscometric and electrophoretic methods permits quantitative assessment of the properties of adsorbed albumin layers on the surface of hemosorbent particles. References 38: 22 Russian; 16 Western.

02791

UDC 577.3

**Dynamic Mapping of Evoked Magnetic Fields in Human Brain**

18400127 Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 296, No 1 Sep 87 pp 231-235

[Article by Yu. Ye. Zhuravlev, A. Ya. Lipovich, A. N. Matlashov, A. M. Taratorin, N. V. Golyshev, S. V. Motorin, Academician Yu. V. Gulyayev, E. E. Godik and B. M. Rogachevskiy, Institute of Radiotechnology and Electronics, USSR Academy of Sciences, Moscow]

[Abstract] Interest in studies of magnetic fields around the human head, as a means of investigating its electric activity is increasing continuously. Distribution of magnetic fields of the brain is studied by means of special maps which represent selected instant determinations without reflecting the space-time dynamics of the distribution of magnetic fields. An automated determination/calculation system for dynamic mapping of human brain magnetic fields was discussed using a magnetometric system based on a superconducting quantum interferometer sensor and a numerical system of data processing. The mapping was performed at millisecond intervals on 36 points of a network on the left side of the skull. Analysis of such charts makes it possible to determine the interaction between dipolar structures observed at various time intervals as well as to isolate concurrently occurring independent actions of various sources of magnetic fields. Figures 3; references 9: 3 Russian, 6 Western (1 by Russian authors).

7813/9274

**Association of Chlorophyll a With Amine on Silica Surface With Chemically Grafted Hexadecylsilyl Radicals**

18400096b Moscow ZHURNAL FIZICHESKOY KHIMII in Russian Vol 61 No 9, Sep 87 (manuscript received 27 Mar 86) pp 2455-2460

[Article by T. N. Kropacheva, N. A. Mamleyeva, and L. I. Nekrasov, Moscow State University imeni M. V. Lomonosov, Department of Chemistry]

[Text] Formation of different aggregated forms of chlorophyll at much lower concentrations of it than that in the chloroplast membrane is typical of most model systems of photosynthesis. This paper describes a study of association of chlorophyll a with dimethyloctadecylamine upon their combined adsorption on chemically grafted hexadecylsilyl from a binary solvent containing water. Use of a solvent, one component of which is water, made it possible to produce, in the adsorption system, a water environment typical of the basic mass of chlorophyll in vivo. It was found that the shortwave form of chlorophyll a in vivo is caused by existence of structures in which pigment molecules are bound with the hydrophobic region of the protein by means of phytol and, simultaneously, participate in the formation of coordination complexes with nitrogen-containing amino acids which are stable in water and which are found in the hydrophilic zone of the membrane protein. Increase of chlorophyll a concentration in mixed layers with dimethyloctadecylamine reduced the fluorescence yield due to an increase of concentration of aggregated forms of chlorophyll a, typical of individual layers produced by adsorption of this pigment on the binary solvent. Possibilities of eliminating flaws in the system studied, caused by aggregates playing the role of parasitic centers of energy quenching, are related to a structural change of both individual pigment and mixed associates of pigment with the surfactant with a change of polarity of the solvent or to variation of functional groups of molecules of the surfactant introduced. Figures 3; references 16: 9 Russian; 7 Western.

02791



**Probable Mechanism of N-Nitrosomethylurea Induction of Transposon Exclusion in Escherichia Coli**

18400130 Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 297, No 1, Nov 87 (manuscript received 13 Apr 87) pp 211-214

[Article by S. V. Vasilyeva, L. S. Davnichenko, I. A. Rapoport, E. K. Mukhamedshin and V. A. Tarasov, Institute of Chemical Physics, USSR Academy of Sciences; Institute of General Genetics imeni N. I. Vavilov, USSR Academy of Sciences, Moscow]

[Abstract] When N-nitrosomethylurea interacts with genetic structures containing transposons, it elicits binding with transposon exclusion mutations with a frequency similar to that of mutations in those chromosomal genes. A study was conducted to determine if transposon exclusion induction is dependent on protein synthesis, or if it is connected with activation of the *recA*<sup>+</sup> and *lexA*<sup>+</sup> genes of the SOS process. The effect of the SOS-repair system inhibitor para-aminobenzoic acid

(PABA) on transposon exclusion was also examined. It was found that when Tn9 exclusion was located on the F<sup>-</sup> sex factor, nitrosomethylurea-induced exclusion was significantly greater than when it was located on the chromosome. For Tn5 and Tn10 exclusion was greater when the transposon was on the chromosome. Nitrosomethylurea increased exclusion rate by a factor of 5 to 150. PABA inhibited induced, but not spontaneous, exclusion. Using cysteamine for Tn9 and both cysteamine and chloramphenicol for Tn5 and Tn10, it was noted that blocking protein synthesis reduced exclusion rate by a factor of 10 to 70. The results indicate that nitrosomethylurea lowers bacterial viability by reducing the activity of cellular enzymes and causing the accumulation of lethal mutations. The active products of the *recA*<sup>+</sup> and *lexA*<sup>+</sup> genes, which control the SOS-repair system, increase the viability of nitrosomethylurea-treated material. This increased viability is favorable for demonstrating Tn exclusion caused by nitrosomethylurea. References 7: 5 Russian, 2 Western.

12126

**Ganglioside Inhibition of Cytotoxic Activity of Natural Human Killer Lymphocytes**

18400131 Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 297, No 2, Nov 87(manuscript received 16 Jun 87) pp 495-497

[Article by E. V. Dyatlovitskaya, V. A. Matveyeva, T. Ye. Klyuchareva, Ye. V. Kryukova and L. D. Bergelson, Institute of Bioorganic Chemistry imeni M. M. Shemyakin, USSR Academy of Sciences; Scientific Research Institute of Carcinogenesis, All-Union Oncological Scientific Center, USSR Academy of Medical Sciences, Moscow]

[Abstract] Gangliosides have been shown to inhibit the cytotoxic activity of mouse splenocytes and Syrian hamster killer lymphocytes, with the degree of inhibition specifically dependent on oligosaccharide chain structure. Ganglioside blood levels are elevated in tumor carriers, due to shedding from the tumor surface. This may be one of the factors inhibiting the cancer-fighting

activity of killer lymphocytes in cancer patients. In connection with these findings, a study was conducted on the effects of the gangliosides NeuAcLacCer and (NeuAc)<sub>2</sub>LacCer, whose levels are elevated in cancer patients, and of NeuGcLacCer and NeuAcGgOse<sub>4</sub>Cer on the cytotoxic activity of human killer cells and MOLT-4 lymphoma cell sensitivity to them. MOLT-4 cells labeled with <sup>51</sup>Cr were used. All of the gangliosides studied inhibited the cytotoxic activity of the human killer lymphocytes without killing them. Preliminary treatment of the labeled cells with ganglioside increased sensitivity only for (NeuAc)<sub>2</sub>LacCer. NeuAcGgOse<sub>4</sub>Cer was active against human killer cells, even though it is inactive in mouse and hamster. The data suggest that the receptors differ between species. The results also indicate that the ganglioside (NeuAc)<sub>2</sub>LacCer, found in many tumors, in embryonic tissue and in the blood of cancer patients, can inhibit the activity of human killer lymphocytes. References 11: 8 Russian, 3 Western.

12126

### Improved Carbon Hemosorbent for Treatment of Alcoholism

18400133 Moscow *TEKHNIKA-MOLODEZHI*  
in Russian No 9, Sep 87 pp 27-28

[Article by Mark Goldin, Candidate of Chemical Sciences: "Medicinal Carbon"]

[Abstract] At the All-Union Center for Treatment of Acute Poisoning, which is part of the Scientific Research Institute of First Aid imeni N. V. Sklifoskiy, a method has been developed which can break the narcotic addiction cycle of those who have decided independently to do so. The goal is to eliminate toxins from the blood of the addict and thus prevent abstinence syndrome. Doctor of Medical Science Ye. A. Luzhnikov, director of the All-Union Center for Treatment of Acute Poisoning, and his coworker, Candidate of Chemical Sciences M. M. Goldin, developed a new, highly effective method for sorption of toxic substances from biological fluids. A good medical sorbent must not harm blood cells, must remove toxins and must be cheap and available enough for widespread use. Small granules of nitrogen-containing activated carbon possess good thromboresistance, while the cost of these "black pearls" is not high. Blood cells have a negative surface charge, while all natural carbon hemosorbents are positively charged, leading to undesirable interactions. The method developed uses a simple electrical scheme to give the carbon hemosorbent a negative charge. For experimental purposes, carbon with a very high positive charge, which disrupted erythrocyte membranes, was chosen. It was polarized at -100 mV relative to the silver chloride reference electrode. As a result, blood passing through the sorbent column had unchanged protein composition and number of formed elements. Clinical trials of the new method demonstrated its indisputable advantages. Abstinence syndrome was abolished in one or two sessions, which practical physicians know is extremely difficult to accomplish by traditional means. The remission period between acute attacks is lengthened. Patients are spared the harmful side effects of pharmaceutical preparations. Since early intervention is important, a special apparatus was developed which fits in a physician's bag. This procedure can be used in drug addiction, alcoholism and other acute diseases. Figures 3.

12126

UDC 617-022-08:[615.38:615.831.4

### Combined Extracorporeal Detoxication of Fulminating Sepsis

18400108b Leningrad *VESTNIK KHIRURGII IMENI I. I. GREKOVA* in Russian Vol 139, No 10, Oct 87 pp 109-112

[Article by A. I. Lobakov, V. L. Chernyakov and O. N. Vetchinnikova, Moscow Oblast Scientific Research Clinical Institute imeni M. F. Vladimirskiy]

[Abstract] Combined extracorporeal detoxication modalities were employed in the case of 52 patients with fulminating septicemia of surgical causes, including septic shock. A

combination of ultraviolet irradiation (UVI) and hemosorption in activated charcoal SKN-2M was employed in the case of 12 patients, and UVI + plasmapheresis in 40 patients. Both combined methods were found effective clinically, with improvements in subjective feelings, sleep patterns, return of appetite, and alleviation of toxic encephelopathy. The UVI + plasmapheresis approach also led to normalization of plasma blood patterns, an increase in arterial oxygen tension by 20.1-46.5 percent, and a decrease in carbon dioxide tension by 14.2-14.5 percent. Similar improvements were noted in peripheral blood smears, with the leukocyte counts falling by 36.3 percent within 24 h and subsequently decreasing to control levels. Furthermore, the concentration of mid-sized toxic compounds in the circulation decreased by 45-60 percent after the UVI + hemosorption combination, and by 70-80 percent after the UVI + plasmapheresis combination. In the case of suppurative peritonitis the mortality figure was reduced from 46.5 to 23.8 percent. These findings provide yet another confirmation of the therapeutic efficacy of combined detoxication in fulminating septic conditions. Figures 1; references 2 (Russian).

12172/9274

UDC 616.13/.14-089.81

### Revascularization With Soviet Bioprosthesis

18400108a Leningrad *VESTNIK KHIRURGII IMENI I. I. GREKOVA* in Russian Vol 139, No 9 Sep 87 (manuscript received 18 Dec 86) pp 24-29

[Article by L. V. Lebedev, professor, Yu. V. Lukyanov, L. L. Plotkin, V. N. Vavilov, G. N. Gorbunov, V. V. Shlomin, A. G. Vinogradov, Yu. A. Shneyder, L. A. Khanukov, G. F. Rubtsova and A. D. Smirnov, No 2 Clinic of Surgical Diseases, 1st Leningrad Medical Institute; Leningrad Production Association "Sever"]

[Abstract] Clinical trials were conducted with a Soviet vascular prosthesis prepared from umbilical veins and reinforced with an outer lavsan mesh. Revascularization was performed on 79 patients and involved the ilial and femoral arteries as the sole alternative to amputation of a lower extremity due to atherosclerotic occlusions. Thrombotic and infectious complications in 19 patients in the early postsurgical period made amputations necessary. However, 75 percent of the patients were discharged in a satisfactory state. A 60-month followup of 45 patients using the 'life table methods' showed that patency persisted for 5 years in 57.2 percent of these cases. The vascular prosthesis developed jointly with "Sever" was thus demonstrated to be of clinical utility. Furthermore, the prosthesis was suitable for carrying out thrombectomies. Figures 2; references 17: 9 Russian, 8 Western.

12172/9274

UDC 616-006-085.849.12:546.799.8.02.252

**Cf-252 Neutron Brachytherapy in Oncology**

18400110a Moscow MEDITSINSKAYA

RADIOLOGIYA in Russian No 9 Sep 87 (manuscript received 17 Feb 87) pp 62-67

[Article by B. M. Vtyurin, Scientific Research Institute of Medical Radiology, USSR Academy of Medical Sciences, Obninsk]

[Abstract] A review is presented on an ongoing therapeutic trial with Cf-252 neutron brachytherapy at several Soviet oncological centers. To date, 571 patients have been treated with this modality, with follow-up periods ranging from 2 to 9 years. Control data were derived from 44 patients with analogous tumors managed with Co-60 brachytherapy. Exposure was provided with flexible Cf-252-loaded probes or, in the case of cervical cancer, from apparatus ANET-V. The clinical results showed that there were no significant therapeutic differences between gamma-irradiation and the neutron brachytherapy. Both forms of radiotherapy were judged to be highly effective in the management of various malignancies, with complete tumor regression seen in 100 percent of the patients irradiated with Co-60, and in 96 percent of the patients treated with Cf-252. The respective two-year survival figures were 72 and 83 percent. Recurrences were noted in 3 percent of the control patients and in 7 percent of the experimental cohort. The incidence of side effects due to radiotherapy with both modalities was equal to 27 percent. Regression appeared to be more pronounced with Cf-252 therapy and was evident in an earlier time frame. The preliminary findings indicated the advantages of Cf-252 neutron brachytherapy in many situations, with current studies designed to define optimum schedules in combination with gamma-teletherapy, radiomodifying agents, chemotherapy, and surgery. References 19 (Russian).

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UDC 616-006-092.9-073.756.8-[621.371.083.2]:681.31

**Contrast Enhancement and Quantitative Assessment of Biological Tissues in Experimental Oncology by Means of Biexponential Relaxation Analysis of NMR Tomograms**

18400110b Moscow MEDITSINSKAYA

RADIOLOGIYA in Russian No 10 Oct 87 (manuscript received 2 Jul 86) pp 59-63

[Article by V. Ye. Yushmanov, V. I. Yantsen, I. S. Sokolova and L. A. Sibeldina, Institute of Chemical Physics, USSR Academy of Sciences, Moscow]

[Abstract] Biexponential relaxation analyses were conducted on NMR tomograms to secure contrast enhancement and quantification of tumorous lesions in mice,

based on the  $T_2$  relaxation time. The in vivo studies were conducted on male and female  $F_1(C 7B1/6 \times CBA/2)$  mice with subcutaneously transplanted  $5 \times 10^3$  to  $5 \times 10^6$  melanoma B16 cells. Evaluation of the transverse proton relaxation plots demonstrated that tumor development elicited changes in  $T_{2f}$  ( $T_2$  of the rapidly relaxing component of magnetization) and  $A_f/(A_f + A_s)$  (contribution of the rapidly relaxing component to total magnetization). Since  $T_{2f}$  for malignant tissues increases and  $A_f/(A_f + A_s)$  ( $A$  = proton density signal) decreases, the parameter  $T_{2i}$  was introduced to reflect the  $T_{2f}(A_f + A_s)/A_f$  relationship.  $T_{2i}$ , therefore, represents the increase in  $T_2$  of water protons due to the increase in  $T_{2f}$  and the increase in the contribution of the slow relaxation component to total magnetization. Calculation of  $T_{2i}$  in the 6-90 msec time band yields a maximum value 14-16 days after transplantation, i.e., during maximum tumor growth. Optimum contrast enhancement was obtained in the time interval where  $t$  is greater than zero but less than  $T_{2f}$ . This approach facilitated localization of the melanoma on the NMR tomograms and is expected to be effective for other diseases, particularly those associated with disorders in the body's water balance.

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UDC 615.849.12.015.3:[615.47:681.31

**On-Line Measurement Device in Radiotherapy**

18400110c Moscow MEDITSINSKAYA

RADIOLOGIYA in Russian No 10, Oct 87 (manuscript received 17 Feb 87) pp 72-73

[Article by V. M. Abazov, S. A. Gustov, V. P. Zorin, S. A. Kutuzov, I. V. Mirokhin, G. V. Mitsyn, A. G. Molokanov, O. V. Savchenko and A. V. Filimonov, Joint Nuclear Research Institute, Dubna]

[Abstract] The advantages of high-energy proton therapy rest on the creation of depth-regulated dose fields of desired configuration. The creation of appropriate depth-dose configurations requires automatic systems capable of precise beam delivery and high servo responsiveness. A qualitative description is provided of such a system relying on two Hewlett-Packard computers, HP21MX and HP2100C. HP21MX is used for various measurements, preliminary processing of the results, and for controlling the servomechanisms. HP2100C serves for final processing of the results obtained in the various measurements, the creation of a data bank, and for introduction of additional information into the system in the process of radiotherapy. The description of the various subsystems includes those for information gathering, pre-radiation preparation, computerized tomography, irradiation control, equipment testing, and system planning. References 4 (Russian).

12172/9274



**Optimal Regulation of Blood Circulation and Blood Formation with Changing Motor Activity**

18400132 Moscow DOKLADY AKADEMII NAUK  
SSSR in Russian Vol 297, No 1, Nov 87 (manuscript  
received 22 Apr 86) pp 248-250

[Article by I. F. Obratsov, M. A. Khanin and I. B. Bukharov, Moscow Aviation Technological Institute  
imeni K. E. Tsiolkovskiy, Moscow ]

[Abstract] A mathematical model was constructed for the functional state of the blood circulation and blood formation systems under conditions of changing motor activity, particularly hypodynamia. The energetic optimum was defined as occurring when the sum of the power requirements of the heart, the blood formation system and movement is at a minimum. Heart power requirements are determined from the cardiac efficiency coefficient, which changed only slightly with changing motor

activity. Motor power expenditure is affected by circulating blood volume and linearly dependent on body mass. Oxygen balance, blood circulation hydraulics, peripheral resistance and arterial pressure were considered. The optimum values of other physiological parameters were expressed in terms of optimum hematocrit value. As motor activity decreases optimal hematocrit and circulating blood volume also decrease, while blood circulation minute volume increases. Comparison of theoretical and experimental data gave satisfactory agreement for significant lowering of motor activity. The results indicate that the lowering of the hematocrit and circulation volume with increasing minute volume observed in hypodynamia are normal physiological adaptation, achieving a state of minimal energy expenditure. Figures 1; references 12: 4 Russian, 8 Western.

12126

**Basic Guidelines for the Development of Protection of the Population's Health and for the Restructuring of the USSR's Health-Care System During the 12th FYP and Period Up to 2000**

81442340 Moscow PRAVDA in Russian 27 Nov 87 pp 1-3

[Lead article in Pravda: "Basic Guidelines for Protecting Public Health and for Restructuring Health Care in the USSR in the 12th Five-Year-Plan and the Period Up to the Year 2000"; article follows rubric "In the Central Committee of the Communist Party and the USSR Council of Ministers"; first paragraph is PRAVDA explanatory lead-in]

[Text] The CC CPSU and the USSR Council of Ministers affirmed the "Basic Guidelines for Protecting Public Health and for Restructuring Health Care in the USSR in the 12th Five-Year-Plan and the Period Up to the Year 2000" after examining additions and changes that were based on a nationwide discussion in labor collectives; health-care and medical science institutions; party and economic activists at the republic, kray, and oblast levels; ministry and departmental staffs; and the central press and letters written by workers.

The course laid out by the XXVII Congress of the CP for the acceleration of the social and economic development of the country calls for the execution of large-scale social programs. The Party and the state regard the protection and improvement of the health of the Soviet people, the lengthening of their lives and the enhancement of their creativity, and the basic improvement of the quality of medical care to be matters of the highest importance.

Health is a blessing and good fortune for every individual and is a necessary condition for the growth of labor productivity, the economic strength of the country, and the well-being of the public. The concern of the Communist Party and the Soviet state for the health of every citizen is a reflection of the principles of humanism and social justice and serves the goals of continued prosperity for socialist society.

The Great October Revolution laid the groundwork for radical transformations that reflected the most vital and innermost expectations of a broad spectrum of peoples. For the first time in history, the state assumed responsibility for public health and guaranteed the legislated, organizational, and material provision of the appropriate economic, social, and medical measures.

The USSR has created a truly public system of health care that is based on Lenin's principles of free and accessible medical care, prevention, unity of scientific and applied areas, and the active participation of the community in health-improvement measures. This system has reliably protected public health and has assured the country's well-being at every stage of development of our society.

During the 70 years of Soviet power, the state of public health has improved drastically as a result of the systematic execution of plans of socialist construction, the state's carrying out large-scale disease-prevention programs, the improved working and living conditions, and the growth of health care and medical science. The mortality rate has dropped by a factor of 3 in the general populations and by a factor of 11 among children; the average lifespan has increased by a factor of 2; and many dangerous infectious diseases have been eradicated. On-the-job injuries, occupational diseases, and disability among workers are steadily declining.

The steady trend toward the social uniformity of public health must be considered one of the uncontested achievements of socialism. Improved physical fitness, a lower mortality rate, and a longer creative life typify various population groups and all nations and peoples of the Soviet Union. Many nations, doomed to extinction before the Great October Revolution, are now quite healthy.

Soviet health care has become a large sector of the social sphere. Tens of thousands of clinics, hospitals, emergency medical care stations, and children's facilities have been built and equipped, as have hundreds of scientific-research institutes and educational institutions. A system for protecting mothers and their children has been set up, as well as a health-and-epidemiological service and an expansive network of sanatoria and recreation centers. The sector includes 1.2 million physicians and 3.3 million mid-level medical personnel. The growth of its personnel, material-and-technical, and scientific potential makes it possible to provide to the public not only general-practice care, but also various types of specialized care.

The impressive achievements of Soviet health care have received widespread recognition. Its principles and its system of organizing primary medical and and public-health care have been recommended by the World Health Organization as an example of the creation of nationwide services.

The successes that have been achieved testify to the great advantages and possibilities offered by a socialist society in solving problems associated with the protection of public health. An objective analysis shows, however, that this potential is not being used to its full extent. Negative tendencies began to appear and grow in the health care in the 1970s and the early 1980s. A decline in the rates of the country's economic growth and a lapse in attention to aspects of health care led to lower outlays for health care in the state budget and slowed the processes of renewal of the sector's material-and-technical base and its acquisition of new drugs and treatment techniques. Organizational and planning deficiencies, lower requirements, and less monitoring caused serious errors in the determination of the basic guidelines for the sector's activity and the rates of development of certain services. As a result, the manner of evaluating the operation of

medical institutions was not oriented toward improving the quality of the treatment-and-preventive or medicinal care provided the public. Callousness, heartlessness, rudeness, bribery, bureaucratism, and an irresponsible attitude toward professional duty were pervasive. Moral and ethical distortions existed in the admissions process for higher medical education institutions, in the evaluation of training and work, and in promotions in service. The existing wage system did not provide incentives for improving the quality of work, for mastering skills, and acquiring knowledge, or for enhancing one's qualifications.

Attention to preventive measures—a leading factor in the protection of public health in the USSR—has slackened. Ministries and departments and local soviets of people's deputies are not taking the needed measures to protect water supplies, the air, and the soil from pollution and to create safe working conditions on the job. In a number of regions of the country, the population does not have good-quality drinking water, and in some cities, the concentration in the air of substances harmful to health exceeds the accepted standards several times over. The health-and-epidemiological service is exhibiting inertia and passiveness in solving ecological problems and is not using the broad powers at its disposal to solve such problems. The state's health inspection system is not very efficient in monitoring the observance of health and hygiene standards and regulations at enterprises, institutions, and organizations.

For many years, no one paid any attention to what constituted a healthy way of life. More than two-thirds of the population is involved in no systematic physical exercise program or in athletics, as much as 30 percent are overweight, and nearly 70 million smoke. Drunkenness and alcoholism are widespread, and the number of people using drugs is growing. A decisive and relentless struggle with these phenomena so foreign to socialist morality has begun in the country. The struggle, however, is not being conducted with the necessary persistence and continuity everywhere.

The level and quality of medical care does not fully meet the growing needs of the Soviet people. Current experience and new, more efficient techniques for identifying diseases and treating them are being introduced slowly. There is no coordination between the operation of hospitals [statsionarnyye] and nonhospital facilities. Hospitalization is denied for no reason, patients who need emergency care are taken to treatment facilities belatedly, beds and treatment-and-diagnostic equipment are used inefficiently, hospital stays are lengthy, and, in a number of clinics, reception hours are not convenient for the public.

Especially alarming is the state of operations set up to protect the health of mothers and children. Maternity centers, children's clinics and hospitals, and women's consultation facilities do not provide a modern level of prophylaxis, diagnosis, or treatment, because they are

poorly equipped and the personnel are poorly trained. Health-and-hygiene requirements are severely breached in obstetrics facilities and in departments and wards for newborns and premature infants.

The material-and-technical base of this sector is in serious need of repair. Many hospitals, maternity centers, clinics, dispensaries, and pharmacies are located in converted or even emergency sites; they need major repair or renovation; and they do not have central heating, running water, a sewer system, or hot water. Meanwhile, from year to year, the capital set aside for construction of health-care sites is not being put to use. The typical plans for treatment-and-prevention facilities do not call for state-of-the-art medical technologies as much as they could.

The needs of the treatment-and-prevention facilities and of the public in terms of medical equipment, drugs, dressings and disinfectants, and nursing supplies are not completely satisfied. Most of the domestically produced instruments and devices are inferior in performance to the better, foreign instruments and devices.

The great potential of domestic medical science is not being used to the full extent. Medical science research is conducted without any regard for a social mission or the practical priorities. The existing system of planning does not provide for the efficient use of the intellectual and material-and-technical potential that we have. The level of basic and applied research is low: only five percent of these projects are patentable, and a third of our domestic research efforts duplicate foreign efforts. The translation of scientific achievements to practice is slow. The problem of training a young scientific shift is acute.

The USSR Academy of Medical Sciences does not integrate scientific efforts and does not demand quality and meaningfulness of its research. The science in the higher educational institutions, in which almost half of the higher-qualified medical-science personnel are engaged, owes a lot to practice.

These and other shortcomings have had a negative effect on the state of public health. The dynamics of demographic processes have worsened in the country, mortality rates among children and able-bodied men are high, the average lifespan has not lengthened by much, and the morbidity rate for cardiovascular disease and cancer is practically the same. The economy is suffering great losses because workers, office personnel, and kolkhoz farmers are unable to work because of disease or injury, or because they must take care of their sick children. Everyday, such things keep nearly 4 million people from work; annual relief payments for temporary disability exceed 7 billion rubles.

The state of the system for protecting and improving public health gives rise to well-founded criticism among working people and to serious concern in the CC CPSU and the Soviet government. The deficiencies in the

operation of health-care units and institutions impair the social policies of the Party, the consolidation of the way of life, and the acceleration of the development of the society as a whole.

The CC CPSU and the USSR Council of Ministers are spearheading the effort to radically restructure health care, eliminate the deficiencies, efficiently use the existing potential, and sharply raise the quality of medical care. Such a state must be achieved, so that the activity of all components of the sector and the activity of each medical worker will meet today's needs. Everywhere we must completely satisfy the needs of the population for medicines and for care.

For that purpose, in accordance with the Basic Guidelines of Economic and Social Development of the USSR for the Period of 1986-1990 and the Period Up to the Year 2000, a set of measures will be effected for intensifying disease prevention, for introducing in stages a dispensary system for the entire population, for raising the occupational proficiency of medical personnel, and for improving the quality and standards of work done in treatment-and-prevention and pharmaceutical facilities.

The CC CPs of the union republics, the Party kray committees and obkoms, the councils of ministers of the union and autonomous republics, the local soviets of people's deputies, ministry heads, department heads, enterprise heads, and public organizations will increase the attention given to health-care needs, the solution of problems associated with environmental protection, and the improvement of the working and living conditions of the population. They will also secure the unconditional execution of plans for strengthening the material-and-technical base of health care and actively participate in the work of promoting a healthy way of life among citizens, of staffing the sector, and of providing its personnel with ideological and moral training.

The Soviet society must devote increasingly more attention to the preservation and strengthening of the health of healthy individuals.

To involve the general public in the protection of public health and the restructuring of public health-care, as well as the expansion of information of the achievements of the USSR in this area, the initiative of the workers on the creation of a Soviet health and charity fund based on voluntary payments made by working collectives, public organizations, arts unions, and individual citizens will be supported.

Raising health care in our country to a qualitatively new level is a public matter and a state matter. Accomplishing the goals that have been set requires that all medical personnel and all Party, soviet, and trade-union units and public organizations like the komsomol take a creative approach to improving the protection and strengthening of public health.

### **1. Improving the efficiency of prevention—the principal direction of Soviet health care**

Throughout the development of Soviet health care, prevention has always been and remains the basic principle and ideology for protecting the health of the people. Prevention consists primarily of a set of measures aimed at securing a high level of health for the people; providing them a long, creative life; eradicating whatever the causes of disease may be; improving the working, living, and recreation conditions for the population; and protecting the environment. Accomplishing all this is not only the task of health-care units, it is also a very important part of the activities of Party committees, ministries and departments, soviets of people's deputies, trade unions, the komsomol, economic leaders, and the labor collectives of enterprises, organizations, and institutions.

The role prevention has played in the successes of Soviet health care is unquestionable. The potential of prevention, however, is still being used insufficiently by the USSR Ministry of Health, the All-Union Central Council of Trade Unions, the ministries and departments, and the local soviets of people's deputies. Prevention, by and large, is something that is merely declared and does not involve sweeping health-improvement measures.

With the scale and intensification of public production growing, combined state and regional programs for protecting and strengthening the health of the individual are acquiring special significance.

With sweeping environmental-protection measures an integral part of public prevention work, enterprises that are sources of environmental pollution and noise must be removed from residential areas, and pollution-free or low-pollution technologies that preclude harmful emissions must be introduced on a wide basis. The introduction and operation of industrial or agricultural sites will not be allowed without purification structures or the establishment of health-protection zones (*sanitarno-zashchitnyye zony*). Throughout the country, the population's requirement for good drinking water will be satisfied, and measures to standardize air quality will be taken without delay. Sanctions of a more stringent nature will be introduced for enterprises whose operation have an adverse effect on the environment and the health of the individual. The role of the *ispolkoms* of soviets of people's deputies, ministries, and departments in action aimed at preserving the ecological balance will be upgraded. Regarding its work in organizing the struggle against environmental pollution as one of the prime focuses of preventive action, the USSR Ministry of Health will intensify its efforts in that area.

The units of the state's health inspection system will use the existing legal levers more decisively and more efficiently to effect unconditional observance of the legislation that is in place to keep soil, water reservoirs, and the



air clean and to force enterprises, institutions, and organizations to observe health-and-hygiene and antiepidemic regulations and standards.

The CC CPs of the union republics, the councils of ministers of the union republics and the autonomous republics, the ispolkoms of the kray and oblast soviets of people's deputies, the USSR Ministry of Health, the All-Union Central Council of Trade Unions, and the ministries and departments will see that large-scale, integrated action is taken to reduce or prevent illness and injury. By the year 2000, we will achieve a 15-20 percent reduction of temporary loss of work due to illness. For that purpose, monitoring will be beefed up of industrial and regional Zdorovye [Health] programs aimed at reducing industrial injury and occupational disease, curtailing the manual labor and workplaces that involve industrial agents that are detrimental to health, freeing women from work in sectors that require heavy labor and harmful conditions, and improving the safety equipment and recreational equipment used by workers.

Attention of people's control units and the general public will be directed to these questions. The basic principles of the Zdorovye programs will be included in current and future plans for the social and economic development of the appropriate regions and industries of the economy.

It will be considered imperative to codify into a single government act the regulations and procedures for observing health-and-hygiene standards that operate across the entire country and that are mandatory for all enterprises, institutions, organizations, official persons, and citizens of the USSR.

The USSR State Agroindustrial Committee, the USSR Ministry of Trade, the Central Union of Consumer Societies [Tsentsosyuz], and units of the state health inspection system will stiffen the requirements for food products in all stages of manufacturing and will especially stringently monitor the use of mineral fertilizers, toxic agricultural chemicals, and other chemical agents, in order to eliminate the possibility of substances harmful to human health getting into food products.

Monitoring of the procedures for refining, storing, transporting, and selling food products will be intensified. Production of such items that violates manufacturing requirements and does not meet health-and-hygiene standards will not be allowed. USSR state standards for food-industry and agricultural production that are based on scientifically substantiated hygiene requirements will be cited. Particular attention will be paid to health-and-hygiene regulations at public dining facilities, to prevent any possibility of illness caused by the consumption of poor-quality food products.

Units of the procurator's office [prokuratur] and health inspection will take full measures against exposed violations of health-and-hygiene and antiepidemic regulations and standards and will use legal means more actively to reliably protect the health and lives of the Soviet people, instituting financial, disciplinary, administrative, or criminal proceedings against the guilty, according to the prescribed procedure.

Considering the tremendous significance balanced, sound nutrition has for the health of the population, the quality and efficient use of food products will be systematically improved. Indices that show the biological value of food products will be included in the USSR state standards. The production of items with a higher biological value and a lower content of animal fat, sugar, and salt will be increased, as will the manufacture of vegetable oils, and dietetic, vitaminized, and protein products. By 1991, the needs of infants for pastelike [pastobraznyye], liquid milk products, for canned baby food [detskiye konservy], and dry, adapted [adaptirovannyye] milk mixtures will be completely satisfied.

Along with this, an enterprising health education program will be conducted to raise our understanding of nutrition, so that food intake will match the energy consumption and physiological needs of the body.

An affirmation of a healthy way of life for every individual and for the entire society will serve as the basis for preventive measures. A conscious and responsible attitude toward health as a public property will become a standard of life and of the behavior of all Soviet people. This will mean rooting out harmful habits; educating ourselves to a high level of association, behavior, and nutrition; observing a regime of work and rest; doing physical exercise or taking part in athletics on a consistent basis; upgrading general health education and hygiene knowledge; and developing the individual in a balanced manner.

Work in this area that has a singleness of purpose must begin in childhood. The role and responsibility of the family in preserving and strengthening the health of a child must be elevated, and parents must receive better training in terms of the rules for hygienic education and care of their children. Modern methods of molding and thoroughly developing children will be implemented on a broad scale in preschool institutions.

The USSR Ministry of Education, the USSR Ministry of Higher and Secondary Specialized Education, and the USSR State Committee for Vocational and Technical Education, together with the USSR Ministry of Health and the USSR Union of the Societies of the Red Cross and the Red Half-Moon [Polumesyats], will develop a program for educating the coming generation in hygiene and for teaching it first aid; they will also actively strive to create the conditions needed to promote a healthy way of life in youth. Mandatory health-improvement measures in schools, vocational and technical institutions,

pioneer camps, and sanatoria-dispensaries will be effected for parents and their children. Special preschool sanatorium-type institutions for weaker and chronically ill children will be set up.

A consolidated program of physical education of the public will be developed and introduced by 1989, after scientifically based standards and requirements for physical training and exercise have been determined for various age and sex groups.

In the 12th and 13th five-year-plans, additional curricula for physical education will be introduced into general-education schools, vocational and technical schools, and higher and intermediate specialized institutions of learning, so that students will be doing no less than 6-8 hours of physical exercise a week. The network of athletic groups at enterprises, institutions, and organizations will be expanded, and economically accountable "Fizkultura i zdorove" [Physical Conditioning and Health] associations will be created at residential facilities. The use of health-and-athletics centers will be more efficient. The funds of working collectives will be used (with their permission) to create health centers—some of which will be cost accountable—that will make extensive use of toning [zakalivaniye], training, physical training, tension relief, and other means of improving health.

The work that is being done by health-care and physical-conditioning agencies in terms of improving the physical development of the population will be radically restructured, and the interactions between the agencies will be improved.

The most important task of preventive work today involves active dissemination of health-and-hygiene information. Together with health-care agencies and the Societies of the Red Cross and the Red Half-Moon, the mass media will increase the number of television and radio broadcasts and newspaper and magazine publications concerning hygiene and health education of the population, including sex education and preparation for family life, with particular attention paid to the clarity and persuasiveness of the education materials. They will cover events associated with the conduct of preventive and health-improvement measures more widely.

The USSR Ministry of Health and the councils of ministers of the union republics will take action to vastly reduce infectious illnesses, primarily influenza and other acute respiratory illnesses, which account for nearly half of all cases involving temporary loss of work; the economic loss amounts to nearly 3.5 billion rubles a year. For that reason, effective means of prevention and treatment will be developed; common hygienic and strengthening procedures will be used widely, especially among children; and the organization of our vaccination procedures will be improved. The incidence of intestinal infections and viral hepatitis will be reduced via control of bacterial and viral pollution of drinking water and food products.

Concern for the health of our present and future generations demands decisive action against drunkenness and alcoholism, drug abuse, and smoking and the creation of effective drugs and treatment techniques. The aggressiveness of the dissemination of health information will be intensified, and the damage caused by the use of liquor and drugs will be clearly and persuasively explained. A state program for overcoming smoking will be developed in 1988, and it will involve a broad complex of medical, economic, legal, organizational, and educational measures.

A general dispensary system for the public plays an important part in the current prevention strategy. It presupposes an annual medical examination for every person in order to identify individuals with early signs of various diseases, individuals exposed to environmental agents detrimental to health, or individuals with harmful lifestyles, and it calls for taking the necessary remedial measures. This general dispensary system will make it possible to have a consolidated system for evaluating and systematically observing the state of health of the Soviet citizen and the society as a whole. Relying on the achievements of scientific and technical progress, this system will actively provide for the timely conduct of preventive measures in regard to anything that can cause disease to spring up and flourish. Accomplishing such a program, grandiose in its own right and in social significance, will be a qualitatively new stage in the development of Soviet health care, when the state assumes responsibility, in its highest form, for the health of every citizen—actively and dynamically tracking and protecting that health over the course of the citizen's entire lifetime.

The introduction of the dispensary system is to be accomplished in two stages: up to 1991, along with the chronically ill, the dispensary system will cover, throughout the entire country, children up to about 16 years of age [dети i podrostki], students, pregnant women, veterans, and workers and office personnel of specific branches of industry and agriculture; by 1995, the entire population of the country will be covered.

The USSR Ministry of Health, the councils of ministers of the union republics, the All-Union Central Council of Trade Unions, health-care agencies, and the USSR Union of the Societies of the Red Cross and the Red Half-Moon will improve the effectiveness of the explanatory work among the public concerning the goals and tasks of the general dispensary system and will promote the broad-based participation of the medical community in that work.

It is the duty of every citizen of the USSR to make the dispensary system work and to take an active part in the preventive and protective measures that are conducted.

**II. Raising the quality of medical care provided the public—the main goal of health care**

The main goal of health-care units and institutions is to meet the needs of the Soviet peoples for high-quality medical care in a timely fashion, completely, and throughout the country. The activities of health-care units and institutions will be radically restructured via the active use of improved forms of operational organization, new technologies, and modern techniques and means of prevention, diagnosis, and treatment. This will enable the transition to an intensive course of development of health care and an assessment of its activity based on the final results.

Called for is the accelerated build-up of the network of outpatient clinics and a considerable enhancement of the material-and-technical base of such facilities, which, as the primary component of the health-care system, provide constant dynamic observation of both healthy and sick individuals and conduct a broad complex of preventive, diagnostic, and protective measures.

To render diagnoses of illnesses among both the adult and the child populations more complete and more timely, a network of diagnostic centers will be set up at the prehospital level, with a concentration of modern, highly efficient equipment and medical technology—computerized tomographs; units such as ultrasound, radioisotope, and x-ray contrast equipment; and teams of the most highly qualified specialists.

Diagnostic centers will be in place in every republic, kray, and oblast before the end of the 13th five-year-plan. The potential of the higher medical schools, the institutes for the advance training of physicians, the scientific research institutes, and the general hospitals will be used to the fullest extent to further develop and improve the clinical consultation-diagnostic service.

More people will be examined and treated in clinics or privately. The operation of dispensaries will be restructured and will be coordinated with that of the outpatient clinics. The practice of organizing departments of active treatment and private treatment facilities [statsionary] at the clinics will be continued with the use of modern diagnostic techniques and the free allocation of medicines.

The work of clinics and dispensaries in preventing disease and protecting the population will be accelerated considerably. Their role in the medical and social rehabilitation of patients will be increased, and the activities of these facilities will be coordinated. By 1990, the organization of departments (offices) of prevention and restorative treatment will be finished in all the clinics. Extrahospital care will be provided to workers primarily during their off hours, based on the work schedule of the facilities and organizations of production sectors.

The role and prestige of the district physician—a fundamental specialist who performs a complex of treatment, prevention, and protective tasks and provides the systematic care for the health of the population—will be elevated. All the conditions necessary for that physician's work to be productive will be provided.

The directors of the outpatient clinics will consider the suggestion of the populations they serve in establishing contingents of regional physician districts.

The general transition to medical care based on the "family doctor" will begin.

In order to coordinate medical care, documentation will be standardized, and every citizen of the USSR will have a medical passport. Physicians will be freed of duties unrelated to their job, and they will concentrate their efforts on work directly related to preventive and treatment practice.

In order to expand the possibilities of satisfying the needs of the population for specific kinds of medical care, clinics that are completely economically accountable will be set up in every republic center, every kray center, and every oblast center during the 12th and 13th five-year-plan. Such clinics will include stomatological and physical-therapy clinics, as well as cosmetic clinics and health-improvement complexes.

The primary plan for improving the hospital care given the public will consist of building up a network of general hospitals and specialized centers; intensifying the treatment-and-diagnostic process; using as much as possible highly qualified personnel, up-to-date medical equipment, and effective drugs; and introducing various levels to the treatment process. Slated to increase are anesthesia, recovery, and intensive care departments (wards) and hospitals and departments for restorative therapy. Same-day-care hospitals [statsionary dlya dnevnogo prebyvaniya] will be set up, as will fully-cost-accountable and budgeted boarding houses [pansionaty] for individuals who need extended care (some of the facilities will be specialized).

The rehabilitation focus of sanatorium/health-resort care will be developed, and sanatoria and departments will be created in all regions for the recovery of patients such as those who have suffered acute myocardial infarct or who have undergone heart surgery or arterial surgery, with subsequent serious trauma. The efficiency of the sanatorium/health-resort therapy and rest will be improved. The network of specialized sanatoria for patients with diseases of the circulatory, digestive, or respiratory organs or of the nervous system will be expanded, and sanatorium care will be located as close as possible to permanent residential areas, with local resorts being developed, especially in regions of intensive economic development.

Nursing care will be improved by means of the broad-based introduction of brigade forms of management and wage for medical personnel, the expansion of the service areas, the combination of occupations, and the use of low-power devices. Medical students, students from intermediate medical schools and general-education schools, and activists from the societies of the Red Cross and the Red Half-Moon will be approached for this



work. Resources specified in the USSR Law on Individual Labor Activity [Zakon SSSR ob individualnoy trudovoy deyatel'nosti] will be used to provide home nursing care and delivery of medicines to homes. The practice of concluding cleaning and maintenance agreements, as well as agreements for other services, with enterprises of municipal and domestic services for will be expanded. All treatment-and-prevention facilities will adhere to the strict observance of health-and-hygiene practices.

The establishment of an emergency first-aid system, based on prehospital and hospital stages, will be completed in order to provide rapid, reliable emergency care to the public. The system will be equipped with specialized vehicles and communications devices, up-to-date gear, and the necessary reagents and medications.

In republic, kray, and oblast centers and in cities with a population of more than a million people, Skoraya meditsinskaya pomoshch [First Aid] associations will be created. The associations will include emergency first-aid stations, aviation units, and first-aid hospitals for adults and children.

The USSR Ministry of Health and the USSR Ministry of Justice will develop a position on the administrative proceedings that citizens who sound false alarms for first aid will be subject to.

A priority for Soviet health care will be the all-out build-up and improvement of the protection for mothers and children. It will be necessary to radically restructure the operation of outpatient clinics for women and children, maternity centers, and hospitals [stationary] for children; to raise the level of their prevention functions; and to intensify the dissemination of information concerning healthy lifestyles. In order to prevent disease and raise the level of health of the coming generation, the system of medical care for women and for children up to about the age of 16 will be improved by integrating the obstetrics, therapeutic, and pediatrics services and developing regional interagency programs.

The operation of women's consultation facilities for the prevention of abortion will be restructured, based on a broad-based introduction of modern methods of preventing pregnancy. Offices for the prenatal diagnosis of disease in fetuses, Brak i cemya [Marriage and the Family] consultation facilities, medical and genetics offices, and centers for restorative therapy in children will be set up in the capitals of union and autonomous republics and in kray and oblast centers. Conditions that allow mother and infant to stay together will be set up in maternity centers and children's hospitals.

Mobile units that provide emergency care to women and children will be developed. At large, general children's hospitals and maternity centers and at emergency first-aid stations, special personnel will be trained to provide

intensive care and resuscitation for newborns and premature babies, for young children, and for women with a childbirth pathology or a postpartum pathology. A network of day hospitals [stationary] for children will be created. By 1995, various types of sanatorium/health-resort therapy will be available to children who need such care, and the network of children's sanatoria and year-round sanatorium/pioneer camps will be increased; by agreement of the working collectives, the sanatoria-/clinics of industrial and agricultural enterprises will be used on a wider basis for improving the health of children and pregnant workers.

The USSR Ministry of Health, other USSR ministries and departments, and the All-Union Central Council of Trade Unions will see to it that the medical-hygiene service is improved.

A service for shop workers at industrial facilities that employ less than 1,000 persons will be developed in regional city clinics. Shop-centered medical districts will be enlarged drastically in 1987-1990, so that up to 1,600 individuals will be served in each of them.

The level of rural medical care will be expanded. Since the central rayon hospitals are the principal facilities for providing quality medical care to the rural population, their material-and-technical base will be enhanced considerably via renovation and new construction financed through broad-based cooperative funding by kolkhozes, sovkhozes, and other facilities. The number of specialized, inter-rayon hospitals, dispensaries, and departments will be increased, to serve the needs of the rural population for specialized care.

District hospitals will be further consolidated, and the practice of using them as departments of central rayon hospitals and for organizing social aid for elderly people who are alone will be expanded. The role of paramedical obstetrics stations in carrying out preventive work in rural areas will be increased.

Mobile units for rendering medical and medicinal aid will be developed: medical outpatient clinics, clinical-and-diagnostic laboratories, pharmacies, and units such as fluorographic offices and stomatological offices. Before 1990, emergency medical stations (departments) staffed with medical personnel will be set up in every region [rayon].

The role of republic, kray, and oblast hospitals as consultation-and-diagnostic, treatment, and specialty centers will be elevated; and large, specialty hospitals and general hospitals, as well as diagnostic centers, will be used on a wider basis to provide high-quality medical care to the rural population.



Temporary and chronic loss of work due to illness will be steadily reduced by improving labor and equipment safety, by taking health-improvement measures, and by raising the quality of medical care and level of medical expertise.

A necessary condition for further reducing disease and death among the population and for raising the quality of medical care is the development and enhancement of specialized types of medical care. A network of all-union, republic, and inter-oblast (regional) centers will be created that have departments and branches for microsurgery, electrocardiac resuscitation [elektrokardiostimulyatsiya], joint prostheses, organ and tissue transplants, and cardiovascular surgery, as well as for the treatment of patients with diseases such as chronic kidney disease.

The creation of cardiology dispensaries in all republic, kray, and oblast centers will be completed in the 12th five-year-plan, and the number of cardiology offices in clinics will be expanded, as will the number of cardiology departments in hospitals [stationary].

Cancer patients will be treated efficiently, with especial attention paid to the use of up-to-date diagnostic techniques for the early detection of malignant tumors. The prevalence and forecast of morbidity will be taken into account on a region-by-region basis in the planning of cancer care for the population. Cancer-care centers will be created in all the union republics, and the construction of oncology dispensaries and radiology facilities will be expanded. State-of-the-art diagnostic and treatment equipment will be used, along with radioisotope preparations and drugs, and disease and death caused by specific forms of malignant tumors will be reduced.

The level of surgical care will be increased. Special departments such as cardiac surgery, vascular, orthopedics, traumatology, neurosurgery, urology, proctology, and burn treatment will be built up and strengthened. The treatment of patients with acute surgical conditions and traumas will be made more efficient, microsurgery and dialysis will be used much more widely, and organ and tissue transplants and surgical interventions will be performed more often.

Stomatological care, especially for children, will be drastically improved; the requirements of all types of this care will be completely satisfied in the 13th five-year-plan. The network of stomatological clinics, departments, and offices will be expanded. Work involving the cultivation of good hygiene and the uninterrupted operation of fluoridation units at water supply stations will be organized everywhere in order to prevent diseases of the mouth. Fluoridated salt will be produced, and decay-preventing toothpastes, such those with fluoride, will be manufactured in larger quantities. Modern techniques involving dentures will be actively employed. To satisfy

the needs of the public, the ministries and departments will increase production of high-quality devices, instruments, and materials used for the treatment and replacement of teeth.

Prevention of diseases involving the optical organs—especially myopia and ocular traumatism—will be improved, and new techniques and management forms for early detection and treatment of cataracts, glaucoma, and retinal disease will be put into practice. Interrayon ophthalmological departments will be built up. The experience of the leading scientific-research and treatment facilities will be actively brought to bear in further improving the medical care rendered to patients with eye disease. Microsurgery and laser technology will be used more widely.

State-of-the-art microanalysis techniques for the early diagnosis of disease will be assimilated, and allergy offices and immunology laboratories will be set up in every republic, kray, and oblast.

Measures will be taken to prevent the most widespread nervous diseases and mental disorders. The work of departments for patients with acute disturbances of cerebral circulation will continue and will improve. Restorative treatment centers for job and social rehabilitation of individuals with diseases of the cerebral blood vessels and the peripheral nervous system will be created in large cities. The network of psychoneurological dispensaries, hospitals, and their departments in rural areas and boarding facilities with job-therapy programs will be expanded. The number of special districts needed for social and job rehabilitation of patients with mental disturbances will be set up at industrial and agricultural facilities. A specialized medical service for rendering social and psychological aid by telephone—"a trust telephone"—will be created in large cities.

Work in the early detection and effective treatment of individuals suffering from alcoholism and drug addiction will be radically improved. By 1990, a network of drug and alcohol treatment centers and offices will be complete, as will departments at industrial, construction, and agricultural facilities; they will be staffed with highly qualified personnel. Economically accountable drug and alcohol treatment outpatient centers and offices will be created for anonymous treatment.

Specialized care such as pulmonology, gastroenterology, endocrinology, and hematology will be strengthened and expanded.

Treatment-and-diagnostic services will continue to be developed and improved, and their number and capacity will be made to meet the needs of health-care facilities. Specific measures will be taken to build up the blood service and to encourage donors.

The level and quality of medical care for the elderly and the disabled, including those who have been disabled since they were children, will be improved considerably. The Union of the Societies of the Red Cross and the Red Half-Moon of the USSR will, in cooperation with health-care facilities, social-security enterprises, public organizations, and labor collectives, take measures to build up a charity service and to provide social aid and personal services to the disabled, war and labor veterans, and elderly and disabled citizens who live alone.

### III. Preparing, training, and organizing medical personnel to meet today's needs

The successful solution of the problems that face health care depend, to a great extent, on the competence of medical and pharmaceutical personnel, on their professionalism, on their ideological and moral make-up, and on their devotion to everything that is new and progressive. It also depends on whether they aspire to restructure their activity in order to achieve lofty ends.

The physician is entrusted with the dearest thing we have—the life and health of the Soviet people. Humanness and nobleness, selflessness and charity, the ability to dedicate oneself entirely to the interests of the patient, and the constant improvement of one's skills are, for the physician, not merely personality features that merit respect; they are qualities that define the physician's professional and civil maturity. The Soviet physician is the bearer of the most progressive communist world view. High moral conviction, a sense of duty to socialist society, and a recognition of the social value of his own profession must be intrinsic to the physician.

In our country, the work of the physician is highly valued by the public. Physicians enjoy a well-deserved authority and trust, and the overwhelming majority of them perform their civil and professional duty honestly and conscientiously. The prestige enjoyed by medical personnel should be elevated even more, the conditions needed for quality and creative work should be created, and a sense of profound respect for the work of medical personnel should be cultivated among the public.

Restructuring health care and elevating its role in the life of Soviet society presents new requirements for medical and pharmaceutical personnel in terms of professional skills, moral make-up, and work management.

The highest goal of medical education is to use the achievements of scientific and technical progress to train and qualify health-care specialists to the highest degree, to accelerate the introduction of the newest techniques for preventing, diagnosing, and treating disease, and to teach adherence to the Oath of the Physician of the Soviet Union.

For that reason, the system used by the higher medical institutes for screening professionally oriented youth will be improved. The seats at the higher institutes will be

filled primarily by individuals who have experience in treatment-and-prevention facilities and by reserve military personnel who exhibit a vocation for the profession of the physician. The provision of medical training to students in interschool work-study combines will be expanded, and the students will be used to provide care in treatment-and-prevention facilities. The conditions for admission into these higher institutes, established for individuals with practical work experience in health-care, will apply to them as well as to auxiliary-training personnel at higher medical and pharmaceutical institutes and scientific research institutes (laboratory technicians and preparers, for example). The organization of the training departments in all medical and pharmaceutical institutes will be completed in the 12th five-year-plan; specific forms of training health-care workers will be expanded; and contingents for admission to higher and intermediate institutes of learning that conform with a scientifically based requirement for personnel will be introduced.

The orientation of the system for training physicians will change to one of training physicians for general practice. Job descriptions; lesson plans; the instructional composition of general theoretical, biomedical, clinical, and hygienic disciplines; the organization of practical training; and the system of monitoring what students have learned will be periodically reevaluated so that the training is as close as possible to the practical needs of health-care. The amount of professional training for future physicians will increase, and clinical disciplines will be studied earlier in consolidated programs. Various types of studies will move toward independent-study programs for the students, and students will acquire practical skills, including training on state-of-the-art and promising, new medical equipment. The diversity of subjects will be reduced by the combination and consolidation of related curricula; and the teaching of social sciences as they relate to professional concerns will be intensified in higher medical and pharmaceutical institutes. Beginning in the 1988/1989 school year, state examinations with student certification for promotion to a higher class will be introduced for the second and fifth courses. Individuals with intermediate medical and pharmaceutical education will be trained in special curricula and programs.

The learning requirements for students will increase in depth and quality. An environment that promotes creativity and competition in learning in student groups will be created. Students who are irresponsible about their studies will be weeded out categorically in the lower courses.

The final stage of the training of physicians and pharmacists will be conducted in modern health-care facilities that have the newest equipment. The effectiveness of internship and preresidency will be increased, with the young specialists being guided to a more profound assimilation of knowledge and skills in their specialties.

An organizational environment will be created that facilitates the integration of higher medical and pharmaceutical education, practical health-care, and science. Medical science institutes and higher medical education institutes will be allied with large hospitals, and specialty faculties will be based at scientific-research facilities.

Beginning in the 1988/1989 school year, standard positions will be developed and introduced for facilities such as the treatment-and-prevention facilities that are used for training specialists, for giving students practical experience, for serving internships, and for giving physicians specialty training.

State examinations will be more relevant and will be set up in a better fashion. Prospective physicians will undergo a complex, mandatory process that certifies their readiness to do independent, professional work. Requirements for the theoretical and practical training of graduating students will be standardized in all the country's institutes of higher learning. Representatives from the health-care field itself will be included on state examination commissions. These commissions will have the right to decide who of the graduating students who fail the state examinations can be certified as mid-level medical workers. After a year of working at an assigned location, those same students will be able to receive their physician's certification if they pass the state examination the second time they take it.

An important role in the radical improvement of the health care provided the public belongs to mid-level and junior medical workers. Paramedics, nurses, pharmacists, and orderlies are not merely the physician's chief aides—they also make up the basic health-care team. Their work requires precise execution of the physician's orders, vigilance, resourcefulness in difficult situations, compassion, sympathy, and charity.

The complexity of modern diagnostic and treatment techniques puts to the forefront questions involving the improvement of the quality of training of specialists with intermediate medical and pharmaceutical education. School curricula and programs must be reexamined, the amount of practical training must be increased, as well as training in the methods and techniques involving the operation of modern equipment, gear, and low-power devices. The inadequacy that exists in the training of specialists with intermediate medical or pharmaceutical education, as compared with those with higher medical or pharmaceutical education, will be eliminated.

The level of learning achieved by a young specialist depends primarily on the qualifications of the professors and instructors. One of our most important tasks is to refine the process of matching, using, and managing the labor of pedagogical personnel. They will spend a probationary period in the leading scientific centers and clinics to raise the level of their professional knowledge. The leading scientists, specialists, and health-care managers will enlisted on a wider basis to train students.

Measures will be taken to further improve the training of scientific and pedagogical personnel, and ideological, educational, and methodological work will be relentlessly refined, with primary attention focused on inculcating professional and moral qualities. Medical and pharmaceutical institutes will be certified between 1988 and 1990, during which time questions will be decided that concern changes in the classification of certain institutes of higher learning, curtailment of admissions to specific faculties, and the closing of some institutes.

Competitions involving the creation of new textbooks will be held, and the circulation of the textbooks will be increased until needs are completely satisfied. Reference literature and encyclopedias will be systematically issued in sufficient quantities. Special encyclopedias for physicians of the outpatient-clinic system and for mid-level medical personnel will be published between 1988 and 1991. A new edition of the *Bolshaya meditsinskaya entsiklopediya* [Great Medical Encyclopedia] will be released between 1993 and 2000.

The system for retraining and improving the skills of medical and pharmaceutical personnel will be restructured. Efficient measures will be taken to further develop institutes and departments for the advanced training of physicians and pharmacists. The attention of the professors and instructors will be focused on using enterprising teaching methods and on drawing on the advances made in health-care agencies and facilities and on new scientific developments. Contingents of specialists whose aim will be to improve the skills of, mainly, workers of local health-care units, of children's facilities, and of maternity centers will be increased.

The motivation of workers to continually supplement and update their skills will be boosted when their wages are directly linked to their professional competence. Periodic certification of specialists will be used more and more; the basis of this certification will be an evaluation of the specialists' professional training, their work results, their labor and performance discipline, their moral and ethical qualities, and their ideological and political maturity. A competitive award system will be introduced for skill categories, with broad-based discussion of the candidates in labor collectives. The heads and chief specialists of health-care agencies and facilities will be more answerable for the quality of certification, which will eradicate formalism, and there will be broad-based glasnost regarding the work of the certification commissions.

The USSR Ministry of Health and the USSR Ministry of Justice, along with the All-Union Central Council of Trade Unions, will establish a disciplinary code for medical and pharmaceutical workers. They will declare a "war to the death" against irresponsibility, abuse of official positions, and other negative phenomena that



discredit the high calling of medical and pharmaceutical workers. They will settle questions of a juridical nature that make it possible for offenders to lose their physician or pharmacist diplomas.

The disproportionate number of medical personnel in certain regions of the country will be corrected, and the most important sectors of health care will be staffed with such personnel: children's facilities and maternity centers, clinics, emergency medical care stations and departments, hospitals, outpatient centers, and pharmacies in rural areas. In order to provide health-care workers security, the necessary on-the-job and living conditions will be created for them, and the advantages and privileges established by law will be fully extended to them.

The USSR State Committee for Labor and Social Problems will decide in the established manner the question of increasing the duration of additional leave up to 12 working days for medical and pharmacy workers at health-care institutions.

They will recommend that the labor collectives of associations, enterprises, and organizations make living space and places in dormitories, in preschool facilities, in Pioneer camps, and in sanatoria/clinics available to physicians, pharmacists, and mid-level medical and pharmaceutical workers who directly service these working collectives, just as they are available to workers and office personnel. Forms of moral and material incentive will be used more widely to encourage better work performance and to actively put the achievements of science and technology into practice.

Work will continue in the improvement of the training of management personnel for all health-care units. Their professional skills will be systematically improved, and every effort will be made to see to it that they profoundly master the essentials of the management and economics of health care, create the conditions needed for carrying out one's professional duty, and develop an environment of initiative, instruction, and socialist competition. An efficient reserve of management personnel will be trained.

For the purpose of raising the level of ideological and educational work among health-care personnel, disseminating information on state-of-the-art practices, and putting into practice new techniques for prevention, diagnosis, and treatment, *Meditsinskaya Gazeta* [Medical Newspaper] will come out more often and in greater volume.

The working, living, and recreational conditions of health-care workers will be improved. Personal sanitation facilities, dining rooms, snack bars, aid stations, recreation rooms, and counseling centers will be set up for them. The number of passes to health resorts for treatment and recreation will increase. The network of

housing construction cooperatives, dormitory facilities, sanatoria/clinics, recreation centers, health-and-athletics complexes, clubs, cultural centers, and Pioneer camps will be built up.

In analyzing economic and social development plans, the councils of ministers of the union and autonomous republics and the *ispolkoms* of the *kray* and *oblast* soviets of people's deputies will call for the allocation of the maximums of capital investment.

Health-care workers have been called upon to create in every working collective an atmosphere of creative activity, in which new means of protecting the health of the Soviet people are searched out and in which the efforts of the physicians of all countries are joined to combat the threat of thermonuclear war.

#### **Developing medical science more actively, and using its achievements more widely in health-care practices**

Medical science plays a leading role in the strengthening of public health, in the creation of fundamentally new means and methods of rendering medical aid, and in the development and affirmation of a healthy way of life for the Soviet people. It has won a solid respect in the world. Its potential, however, is still not being used to the fullest extent for solving the most important of problems—the protection and strengthening of people's health and the extension of their active life. Large-scale, joint research-projects involved with solving the principal health-care problems are few. The quality of many scientific-research projects remains low. Basic research in immunology, genetics, biotechnology, transplantation, hematology, and pharmacology is lagging. The achievements of modern science are only slowly translated into medical practice, which is due to formalism in the planning and finance of scientific projects, to the lack of a social mission in the research that is being done, and to the loose requirements for quality in the final outcomes of scientific-research efforts.

The achievements of world medicine and the experience of rapidly growing sectors of the country's economy show indicate that the timely and broad-based introduction of new techniques and methods of prevention, diagnosis, and treatment into health care can be accomplished only by means of creating specialized subunits with highly skilled personnel and by providing material incentives that encourage the introduction.

The time has come for a radical restructuring of the management of medical science and the planning and organization of scientific activity and for providing these processes specific goals. Scientific research must conform to the social mission of health care. The efforts of our scientists must be concentrated on basic biomedical, clinical, epidemiological, and social-health research, the results of which must lead to the radical solution of the problems of practical health care, above all to the identification of the causes of diseases, so they can be



prevented or diagnosed early and treated. Science's top priorities must be the study of sociomedical problems; the analysis of the state and dynamics of public health as affected by demographic shifts and changing production and environmental conditions and migration processes; and forecasting levels of illness. Especial attention must be given to the protection of mother and child and to the prevention and treatment of cardiovascular disease, cancer, emotional and mental illness, and endocrinopathic, infectious, hematologic, allergic, and stomatologic diseases.

Scientific research must focus on the field of genetic engineering and biotechnology and on the development of modern drugs, instruments, and automatic systems and techniques for the remote and automatic monitoring of the environment. New principles of organization and management of scientific institutions must be promoted, the achievements of scientific and technical progress must be translated into practice, and modern information-retrieval systems must be developed. The efforts of not only medical specialists but also sociologists, economists, demographers, mathematicians, and representatives of other branches of science and technology must be focused on all these ever so important areas.

The USSR Academy of Medical Sciences must become the genuine headquarters for the leadership and planning of all the medical science in the country and must structure its own activity so that it is in close contact with the USSR Academy of Sciences and scientific-research institutes of other sectors of the economy. Raising considerably the efficiency of the work done by every scientific collective and every research worker and boosting their sense of responsibility for the theoretical and practical value of research efforts must be regarded as one of the most important tasks facing the USSR Academy of Sciences.

The USSR Ministry of Health and the health ministries of the union republics will see to it that social mission of science is formulated, that the use of science's potential is intensified, and that the broad-based translation into practice of the results of scientific research and the experience, techniques, and methods of the leading edge of public medicine is organized expeditiously. The volume of the scientific research conducted at higher educational institutions and institutes for the advanced training of physicians will be expanded and its quality improved, and measures will be taken to strengthen the link between science and practical health-care. The role of medical-science societies will be increased.

The USSR Ministry of Health will have the right to determine category, to abolish or change structure, and to create new scientific research facilities in the health-care system within the pale of the sector's wage funds and numerical limits for scientific research workers. It will put the sector's network of scientific research facilities in good order in 1987-1988, using the freed up staff members and material and financial resources for the

most pressing research. It will upgrade the role of expertise in the evaluation of scientific efforts that are being planned and those that are finished, and it will improve the patent and licensing service. The personal interest science workers have in the acceleration of scientific research efforts and their translation into practice will be heightened, with a worker's wages based on the specific contribution he or she makes to the achievement of the final product. The heads of scientific institutions will have the right to give engineering and technical personnel, laboratory workers, and maintenance personnel wage hikes (*nadbavki*) if the volume of the work the institutions perform grows.

Because of the intensification of the work of scientific institutions, the practice of concluding agreements to perform additional research of an important practical value on a cost-accountable basis will be expanded.

When necessary, specialists who work in the health-care field will be enlisted to do such research. Capital received from the client will be used for strengthening the material base of these institutions, for additional work incentive, and for the improvement of the social and living conditions of the workers.

The rights of the heads of flagship scientific-research institutions to direct subordinate institutions and departments, to plan scientific-research efforts, to train and certify scientific personnel, and to use and allocate financial and material resources efficiently will be expanded. It will be considered advisable to set up experimental testing facilities at scientific centers and at flagship scientific-research institutes.

The USSR Academy of Medical Sciences, along with the USSR Academy of Sciences, the USSR Ministry of the Medical and Microbiological Industry, and other ministries and departments, will create interindustry scientific and technical complexes, primarily for the development and manufacture of high-quality chemical and biological reagents and effective medicinal agents.

The combined work of scientific centers, applied-science (industrial) unions, interindustry scientific and technical complexes (laboratories), and temporary scientific collectives will be used on a wider basis to solve pressing problems jointly and to intensify that research findings are put into practice.

The State Committee for Material and Technical Supply, the State Committee for Science and Technology, and the machine-tool ministries will provide health care with domestic instruments and equipment that are as good as any in the world.

A consolidated, computerized system of medical-science information will be developed, and documentary and factual data bases will be assembled. The material-and-technical base of medical libraries will be enhanced. The

dissemination of information on the achievements of Soviet medical science and public health-care in the mass media will be restructured to be more enterprising and aggressive

The USSR Ministry of Health and the USSR Academy of Medical Sciences will develop international cooperation in the field of medical science and health care, primarily with socialist countries; will exchange scientific information on a wider basis; and will put the more valuable of developments into practice more promptly. International scientific and applied science associations will be created.

#### **V. The material-and-technical equipment needed to protect health**

The new goals proposed by the Party and the government in the protection of the health of the Soviet people require a substantial beefing up of the material-and-technical base of health-care institutions, equipping them with up-to-date hardware, and providing them with drugs. This work must become an organic part of the realization of the goals of the XXVII Congress of the CC CPSU, which are intended to develop the social and cultural sphere.

Right now, medical and medicinal care is rendered to the public by 23,000 hospitals, 40,000 outpatient clinics, and 30,000 pharmacies.

Meanwhile, almost a third of the hospital beds are located in converted quarters and violate established health and hygiene standards. Many treatment-and-prevention facilities are short of medical equipment, medicines, implements, and nursing supplies.

Capital investments earmarked for construction at health-care facilities will be increased substantially during the 12th through 14th five-year-plans in order to radically improve the material-and-technical base of those institutions. Specific capital investments for the construction of hospitals and clinics will increase by a factor of 2-2.5, with the portion of the capital intended for equipping them with up-to-date medical equipment up to 40 percent. The structure of capital investments will change decisively, and they will be directed first of all to reconstruction and equipment renovation and to bringing treatment-and-prevention facilities up to speed with established health standards. Every expense will be taken to bring into operation enough hospitals for a total of 1.3-1.4 million beds and enough clinics to handle 2.9-3.2 million visits per shift. Health-care units will be built exclusively according to model and custom plans that are developed on the basis of the achievements and prospects of scientific and technical progress and that provide the best conditions possible for working efficiently and treating patients.

Maternity centers, women's consultation facilities, children's hospitals and clinics will be built at very rapid rates, accounting for no less than 40 percent of the allocated capital investments. The needs of the population for obstetrics and children's treatment-and-prevention facilities will be met completely by 1995, and those for hospital and outpatient clinics, by 2000.

Funds from enterprises and organizations of industry, transportation, agriculture, and all-union communist subbotniks [volunteer work], as well as the contributions of labor collectives and citizens to the Soviet Fund for Health and Charity [Sovetskiy fond zdorovya i miloserdia], will be used on a wider basis for the construction and the reequipping of treatment-and-prevention and pharmaceutical facilities.

Fully-cost-accountable boarding houses [pancionaty] for temporary use by patients and the individuals who accompany them will be built at republic, kray, and oblast treatment-and-prevention facilities, diagnostic centers, and scientific-research institutes.

In order to substantially better the health-improvement work done among urban and rural working people, it will be recommended to the labor collectives of enterprises and farms that medical-hygiene units and sanatoria/clinics be created and that a network of health-improvement complexes and special shops and sectors for occupational, labor, and medical and social rehabilitation be developed. The pooling of funds of enterprises or organizations will be practiced on a wider basis.

If labor collectives request it, the medical-hygiene units that are built will be transferred to the balance sheet of the enterprise or organization and their financing and maintenance will be resolved.

Medical care for the rural population will be substantially improved. The practice of building medical outpatient clinics in complexes with pharmacies and apartments for medical and pharmaceutical workers will be continued. More than 14,000 such complexes are slated to be built in the 12th through the 14th five-year-plans.

There will be a fundamental shoring up of the material-and-technical bases of dispensaries, sanitary-and-epidemiological centers, and other health-care facilities, as well as scientific-research institutes, higher and intermediate medical education institutions, and institutes for the advanced training of physicians.

Matters involving the creation of the proper material base for fully-cost-accountable clinics will be solved in the 13th five-year-plan as a result of new construction and the allocation of additional locations by the ispolkoms of local soviets of people's deputies. By the end of the year 2000, the volume of fee-based services rendered to the public will have increased by a factor of five.

The councils of ministers of the union republics and USSR ministries and departments will assure that of construction of health-care units is of high quality and that the earmarked appropriations are used without fail. Planning of these units will call for the construction of enough residences that at least 25 percent of the workers will have departmental living space.

Special repair organizations subordinate to local health-care units will be created in the capitals of union and autonomous republics and in kray and oblast centers in the 12th through 14th five-year-plans in order to effect timely and high-quality renovation and repair of medical institutions.

The ministries and departments will increase production of medicinal agents to such an extent that by 1993 the needs for such agents will be completely met. Measures will be taken to raise their quality to the level of the best in the world, with efficient packing and packaging. By 1995, the volume of medicines and medical products made will increase by a factor of two.

The list of medicinal agents that are being produced will be reexamined, the manufacture of ineffective preparations will be cut, and the production capacities and resources that are freed will be used to produce new medicines. They will be efficiently used and distributed in specific regions of the country, based on amount, level, and structure of illness among the population.

In order to increase the accessibility and quality of medicinal aid, the network of pharmaceutical facilities will be expanded and its material-and-technical base strengthened. By the year 2000, the number of pharmacies and the capacities of the pharmaceutical warehouses will reach the figures that have been established for them. More and more, pharmaceutical facilities will be located in complexes with health-care facilities. Pharmaceutical production will be specialized and concentrated on the basis of new technologies and the mechanization of production. A reference-information service will be created for medicinal agents.

In the 12th and 13th five-year-plans, the monetary norms for outlays for the acquisition of medicines will be increased by a factor of 1.8-2.2 for hospitals and a factor of 2-3 for clinics; norms for feeding patients will be increased by a factor of 1.5-2.5 for hospitals. There will be a continued expansion of the list of diseases and contingents of the population for whose treatment medicines will be issued for free or at a reduced price.

Health-care institutions will be reequipped with modern medical equipment, tools, and instrumentation, primarily with x-ray complexes, computerized tomography, ultrasound, electronic devices, endoscopic equipment, laboratory analyzers, systems for continuous surveillance of patients, computers, and low-power devices.

Particular attention will be given to equipping the diagnostic centers that are being set up, as well as the maternity centers and the children's hospitals and clinics.

The production and delivery of medical equipment will increase by a factor of 2.5 in the 13th five-year-plan and a factor of 3.5 in the 14 five-year-plan. Enterprises of the defense sector of industry will be called on more and more to develop and manufacture this equipment. The requirements for spare parts will be completely satisfied. By 1992, nursing supplies and disposable medical products will be manufactured in the necessary quantities. The means for proximate analysis on a massive scale will be developed and put into operation.

In re-outfitting health-care facilities and supplying them with medicines, we will take the opportunity as much as possible to cooperate with Comecon member countries. Joint enterprises for the manufacture of medical equipment and drugs will be set up with foreign firms. Assignments to ministries and departments regarding the delivery of drugs and medical equipment will be, when necessary, part of the state's order. A transition will be made to a system of long-term, direct links with medical product suppliers.

The heads of health-care facilities will bear greater responsibility for the efficient and effective use of equipment and technology. Efficiency experts and inventors will work together to develop new medical equipment. The material base will be strengthened for organizations in the USSR Ministry of Health that supply medical equipment, assemble it, operate it, and repair it, and those organizations will be staffed with highly qualified engineering and technical personnel.

Service by the company and prompt repair of complex medical equipment by factory technicians will be established in the terms of an agreement.

The health-care sector's needs for medical vehicles will be totally met in the 14th five-year-plan. New, specialized automotive, aviation, and river vehicles used for emergency medical aid and the safe transport of the ill and the injured will be developed. The fleet of all-terrain vehicles will be expanded, as well as that of the mobile units that provide specialized diagnoses and treatments to the public.

Spare parts and fuel and lubricants will be provided for the specialized vehicles.

Medical workers from regional clinics, district hospitals, rural medical outpatient clinics, and paramedical obstetrics stations who provide direct care in the home will have the right to acquire at reduced cost light, small-displacement vehicles for their own use in servicing patients.

Treatment-and-prevention facilities will be better supplied with light inventory and furniture. By 1995, appropriations for the acquisition of such things will increase by a factor of two, as compared with the 1986 appropriations, and by the year 2000, by a factor of 2.8.

Health care's needs for disinfectants and dressings will be completely satisfied in the 12th and 13th five-year plans.

To accomplish all this will require a considerable increase in financial and material resources. For that reason, the state's plans for the economic and social development of the country call for a substantial increase in the capital directed toward the development of health care to carry out the assigned tasks.

The USSR ministries and departments, the soviets, and Party, trade-union, and komsomol organizations will regard the tasks associated with putting health-care facilities into operation and strengthening their material base as a matter of the highest political importance.

#### VI. Improving the management of health care

The intensive development of health care and the provision of highly technical medical care to the public requires, of necessity, a radical improvement in the sector's leadership and its planning and financing, an improvement based on an expansion of democratic principles and the development of self-management and on a fuller use of full economic accountability, a fuller use of the experience of the leading health-care agencies and institutions, and a fuller use of the outcomes of broad-based experiments involving new forms of management, integration of medical science, and practice.

Today, special attention must be devoted to the following:

The drafting and execution of specific and general medical and social programs—the most efficient form of health-care planning.

The execution of special sector and regional Zdorovye programs aimed at accelerating the medical and social development of labor collectives as well as specific regions of the country.

The concentration of financial, material, scientific, and labor resources on priority goals of health-care development.

The high-quality reorganization of the work performed by medical institutions and a radical renovation of their material-and-technical base.

The changeover to planning and evaluating the work of health-care agencies and institutions not on the basis of "number of beds" or "clinic visits," but on the basis of criteria that reflect the state of health of the public, such

as pertinent indicators like the level of general and infectious disease, of temporary loss of work, of disability, of death, and of sanitary-and-epidemiological well-being.

The financing of health care (without capital-investment limits) will be carried out republic by republic, kray by kray, and oblast by oblast, based on standards that are based on population size and that take into account the demographic, social, economic, and ecological features of the region.

In order to improve the management of the protection of public health, a larger role will be given to the USSR Ministry of Health, the republic ministries, kray, oblast, and city health-care divisions, and central rayon hospitals, and their right to resolve financial, organizational, and staff matters within the means allocated the sector will be expanded. Management at all levels will be able to manipulate material, financial, and labor resources.

The organization of and equipment available in managerial work will be improved, and the amount of instructive, accounting, and reporting materials will be cut. The duplication, formalism, and bureaucratism in the sector's work will be absolutely eliminated.

The organs of health-care management will consider it their highest priority to, as quickly as possible, analyze the state of operations of every medical institution, competently and objectively evaluate its possibilities, its place, and its role in the overall structure of the economic and social development of the region, and to decide on specific measures within the context of the goals associated with the restructuring of the entire health-care system.

The center of gravity for the provision of medical care to the public will shift to the outpatient clinic and to prehospital diagnosis. A large-scale experiment involving the refinement of new forms of management, planning, and finance for health-care institutions will be conducted in a number of regions of the country in 1988-1991.

The kray, oblast, and city health-care divisions of the ispolkoms of the soviets of people's deputies will be shored up because of the abolition of rayon divisions in cities with a population of up to 500,000. In rural areas, the organizing role of the central rayon hospitals and the specialized interrayon centers that are being created will be enlarged. Republic, kray, and oblast hospitals and dispensaries and the chief specialists of health-care organs will bear more responsibility for the state of specialized forms of medical care and for improving it.

Scientific substantiation will be provided for long-term forecasts, for long- and short-term planning of the development of various forms of medical care, and for requirements for drugs and medical equipment and will



be based on trends in the state of health of the population, features of demographic processes, the social and economic development of regions of the country, and, among other things, the ecological characteristics of those regions.

Standards will be formulated in every region of the country for the provision of medical care to the population, and efficient systems will be set up for the development and placement of a network of health-care facilities.

The planning and evaluation of the activities of the organizations that supply health-care facilities and the public with medicinal agents and medical equipment will be based on the promptness with which the organizations satisfy the needs for the products and whether or not they satisfy the needs fully.

In order to introduce the newest medical technologies as fast as possible, make the production and use of unique treatment and diagnostic equipment operational, and produce highly skilled personnel to develop and operate it, a network of intersector medical and technical complexes will be created.

The economic mechanism will be refined in the sector, and its stimulating role in intensifying the operation of health-care units and facilities and in raising the quality of the medical care rendered the public will be boosted. The rights of the heads of health-care facilities in matters involving the planning and use of financial and material resources will be expanded.

Wage differentials and work incentives for health-care workers will be further developed, and the relationship of wage to the complexity, intensity, and quality of work and to the achievement of the best results will be reinforced. Brigade forms of organization and pay will be introduced.

Health-care units will be allowed to build up monetary reserves of up to five percent of the appropriations allocated for the maintenance of medical facilities so that emergency measures can be conducted and managed promptly.

In order to make the heads of enterprises, institutions, organizations, kolkhozes, and sovkhozes show greater responsibility in improving labor conditions and living conditions and in conducting preventive and health-improvement measures, it will be established that if a worker misses work because of illness caused by adverse conditions on the job, the enterprise, institution, organization, kolkhoz, or sovkhoz will have to compensate the health-care unit for part of the cost of the treatment of the worker. In instances involving an on-the-job injury or contamination, a highway accident for whom a transport organization or specific individuals are responsible, food poisoning or acute intestinal infection associated with violation of antiepidemic regulations at a dining

facility, the health-care unit or facility and the trade-union committee will have the right to sue the enterprise, institution, organization, or individuals for payment of the treatment costs.

In accordance with the USSR Law on State Enterprises (Associations) [Zakon SSSR o gosudarstvennom predpriyatii (obyedinenii)], associations, enterprises, and organizations will be allowed to enter agreements on a fully cost-accountable basis with health-care facilities, higher medical education institutions, scientific research institutes, and laboratories regarding making the norms of medical care specified above available to the workers and their families.

It will be recommended that kolkhozes use such agreements on a wider basis.

The funds that go to health-care institutions for rendering such care will not be subject to confiscation into the budget. Part of the funds that come from the agreements will be channeled to incentive funds of the health-care institutions.

It will be considered possible, within the context of agreed-upon principles and at the expense of the patients and their relatives, for treatment facilities to arrange for additional food supply that is based on individual orders that are based on medical indications.

It will be recommended that the All-Union Central Council of Trade Unions take measures that enable a more efficient use of the social insurance fund with an increase in the size of the portion of it that is spent on measures for the prevention of illness and the improvement of medical care for the public.

The ispolkoms of the soviets of people's deputies will take action to centralize the technical and operational aspects of health-care facilities (heating service, water supply, elevator system, and other services).

For boosting the efficiency of the state health inspection, the management of the country's sanitary-and-epidemiological service will be restructured, and the normative and legal basis of its activities will be refined. In 1988, the sanitary-and-epidemiological stations of the USSR Ministry of Civil Aviation (including the staffs and material and financial resources as of July 1, 1987) will be transferred to the sanitary-and-epidemiological service of the USSR Ministry of Health. In cities with a population of up to 500,000, the city sanitary-and-epidemiological stations will be shored up based on local conditions due to the abolition of rayon stations.

In the 12th five-year-plan, the USSR Ministry of Health, along with interested ministries and departments of the USSR, will, in the established manner, look at the matter of creating a consolidated system of health care for the entire population of the country.

To put the management structure of the Medtekhnika system and the pharmacy service in conformity with new methods of the economic mechanism based on the principles of self-support and self-financing, the republic, kray, and oblast levels of management of Medtekhnika will be reorganized in 1988-1990 into production-trade associations; and the republic, kray, oblast, and city levels of pharmacy management, into Farmatsiya production associations. Beginning in 1991, automatic information systems will be used widely for various levels of management of health-care units and institutions.

Protecting and improving the health of the Soviet people and satisfying throughout the country their need for highly technical medical care is a key question of the social policy of the Party and the government and vitally needs time.

The restructuring of health care is a large-scale state measure and an important event in the life of Soviet society. In the process of restructuring, we must amplify the best of what has been achieved by domestic medicine, remove the obstacles in the path of the further improvement of matters involving the protection of public health, and increase the contribution of health care to the growth of socialist society and its economy and to the strengthening of the country's defense capabilities.

Specific plans for improving the system of protecting public health must be developed in every union and autonomous republic, every kray, every oblast, every city, and every rayon, based on local factors.

The principle measures for restructuring health care will be carried out in stages over the course of the 12th, 13th, and 14th five-year-plans.

The CC CPs of the union republics and the kray committees, obkoms, district committees, gorkoms, and raykoms of the Party will reinforce the Party leadership in the matter of protecting the health of the Soviet people. The primary Party organizations of health-care units and institutions will play a bigger role in and have greater responsibility for providing the public highly technical medical care throughout the country, for selecting and placing personnel, for developing democratic principles, and for creating in collectives an atmosphere of principles, creativity, intolerance for labor deficiencies, and interest in high-grade results. The top priority of the activity of the ministries and departments, soviets and economic leaders, and social organizations like the trade unions and komsomol will be to solve the problems associated with the protection and improvement of public health.

Improving the health of every Soviet person is a matter of paramount importance, a humane and noble goal for the economic and social growth of our society.

**Poor Planning, Corruption in UzSSR Pharmacies**  
*18400093 Tashkent EKONOMIKA I ZHIZN in Russian*  
*No 8, Aug 87 pp 70-72*

[Article by T. Khankhodzhayev, department head from the UzSSR People's Control Committee, under the "According to People's Control Committee" rubric: "What Is Ailing Pharmacies?"; first two paragraphs, EKONOMIKA I ZHIZN introduction]

[Text] Our journal has already raised the issue of the way in which the republic's population is provided with medications and the way in which the distribution of medications is planned. New aspects of this problem were discovered during an inspection that was jointly conducted by the USSR People's Control Committee and the republic's People's Control Committee.

The material presented in this article deals with these problems.

Do you know how many medications are needed by each of the republic's residents each year? This indicator is expressed by the sum of 7 rubles and 25 kopecks, which is the lowest figure in the country. An in a number of oblasts the figure is even lower—not even reaching 6 rubles.

Can it be that fewer people in Uzbekistan are ill? And why do they visit the pharmacist's less frequently? Well we all know how complicated it sometimes is to obtain the necessary medicine, both as an outpatient and during hospital treatment.

It is not that we are healthier but rather that the manner in which our republic's population is provided with medications lags sharply behind modern medical science and practice as well as behind public health capabilities. How can this be explained?

In the first place, the Main Pharmaceutical Administration of the UzSSR Ministry of Health [UzGAPU] and the oblast pharmaceutical administrations have incorrectly determined the actual need for medications. To put it bluntly, orders for specific medications are made ignorantly, and orders are for all practical purposes never made by generic group. On the one hand, the counting errors that are made when the leading groups of medications are ordered make it necessary for medical institutions to deny the public highly effective drugs—even those that are allocated in full volume. On the other hand, a large quantity of superfluous medications lie as dead weight in warehouses in the pharmaceutical and medical network.

Thus, in the Syrdaryin oblast, a similar practice has resulted in a situation wherein 28,300 phials of insulin costing more than 26,000 rubles are lying around, whereas there is an acute shortage of this medication in

other oblasts. At the same time, tablets for diabetes patients living in the Syrdaryin oblast have been ordered in a quantity that is 12-fold less than the real need. In the Syrdaryin oblast, 124,000 rubles' worth of antidiabetic drugs have been accumulated, and several thousands of packages of bucarban and butamide lie in surplus in Karakalpakin's pharmaceutical warehouses.

At the beginning of this year, there was a total of 5,107,000 rubles' worth of above-norm reserves of different medications in the republic.

All of this, combined with a lack of control over the timely sale of medications whose shelf life is limited, inflicts a significant loss on the government. In 1986 alone, almost 50,000 rubles' worth of medications were written off because their shelf life had expired. And what monetary value can be used to assess the damage to people's health? In the Altynkul branch of the Leninabad Central Republic Hospital of the Karakalpakin ASSR, children were given poliomyelitis vaccine that had long since "outlived" all thinkable storage times in the warehouse. In 6 of the autonomous republic's 18 rayons, no set examinations were done for the early detection of infectious hepatitis because of an absence of diagnostic preparations. And this occurred at a time when the warehouses of the republic's sanitary and epidemiologic station contained 3,650 doses of diagnosticum with an expired shelf life.

In many cases there is no real shortage. By the time of our inspection, the list of flaws in the UzGAPU amounted to 331 items. The resources for 112 of these had been fully allocated to the republic, and the shortage that had arisen was solely the fault of those who were in charge of providing the public with medications.

What else but crying irresponsibility can explain the fact that in the Syrdaryin oblast the total sale of medications beyond the republic's borders increased 10-fold (!), whereas its population was unable to acquire 34 medications that, I note, industry produces in sufficient quantities. Or take the Syrdaryin oblast where people have been refused diphenhydramine hydrochloride, pipolphen, magnesium solution in ampules, and many other preparations, even though the exact amounts of these drugs ordered have been allocated to the pharmaceutical administration. Such facts have been uncovered in other oblasts of the republic as well.

There is no denying that a certain portion of the drug shortage is real, and this must be dealt with. But why have the pharmacies and pharmaceutical administrations created so-called operating reserves of medications that are in short supply? And how are these used? The inspection showed that serious violations are also taking place here. Thus, in the Fergana oblast, reserves that are intended for invalids from the Great Patriotic War and children under the age of 1 year are squandered without

control. There is absolutely no accounting of such drugs, thanks to which their reserves have in reality become the personal reserves of the pharmacy heads.

It also happens that specific drugs are placed in reserve in quantities that are fivefold higher than the normed amounts. This is another of the reasons behind the unbalanced distribution of drugs, the occurrence of shortages even though orders appear to have been satisfied, and the aforementioned use of drugs whose shelf life has expired.

However, the process of assessing and planning for needs, above-norm reserves, and problems related to warehouse reserves and flaws are only part of the problem—the part that the ordinary consumer usually does not suspect. The ordinary consumer's relationship to the pharmacopoeia is at the level of the pharmacy. Consumers judge the operation of the pharmacopoeia as a whole by the operation of the pharmacies. And what is it that we see here?

We will begin with the fact that practically 75 percent of the 475 category 2 pharmacy stations that documents say exist in Karakalpakin are out of service! The situation is especially serious in rural areas. Thus, in the Leninabad rayon of the autonomous republic, the kolkhoz station imeni the 22nd party congress has not operated since 1982, and the kolkhoz imeni Sverdlov has not operated since 1985. And there are many other similar examples.

The situation has been aggravated by the pharmaceutical institutions' extremely weak material and technical base. More than half of all the republic's pharmacies and pharmaceutical warehouses do not conform to basic sanitary and hygiene norms. The pharmaceutical warehouses in Tashkent and the Syrdaryin and Tashkent oblasts are generally in an emergency state, which often results in the tainting of medications. More than 15 percent of pharmaceutical institutions do not have water conduits and a sewer system. Implementation of construction plans is poor. Only 14,900 of the 43,000 square meters of warehouse sites scheduled to be introduced between 1978 and 1986 have actually been introduced.

And how has work in the existing pharmacies been organized. Instances have been discovered in which patients have been placed on special accounting even though there are sufficient quantities of medicine in the pharmacy and it could be administered in the usual order. At the same time, numerous cases have been established in which medications whose dispensation should be strictly controlled by prescriptions are being sold through portable kiosks. For example, in the summer of 1986, many drugs that are only available to pharmacies in really limited quantities were being sold through marketplace kiosks in capital bazaars.

The level of medicinal assistance at many hospitals is also low. More than once have the pharmacies of Samarkand denied ampicillin to hospitals and maternity hospitals even though sufficient quantities of this drug have been allocated to the oblast's pharmaceutical administration. The Syrdaryin oblast's pharmaceutical administration did not allocate the drug lespeniril [Lespenophryl], which was available at practically all the pharmacies, and the rayon oncological dispensary was denied ferrum-lek, even though the pharmaceutical warehouses kept 12 percent of all they received of this drug in constant reserve and it was available in most of the pharmacies checked.

Because of a lack of control on the part of hospital directors and department heads and physicians' negligence, many patients are not even receiving the treatment designated in the hospital itself. For example, half of the patients in the obstetrics department of the Ilyichev Rayon Hospital in the Syrdaryin oblast did not receive their medications in the designated amounts. The same was true for two-thirds of the patients at the Khavast Central Rayon Hospital (TsRB). The senior nurse of the Ilyichev Hospital had 107 different medications, of which she did not use more than 20. Such scarce medications as hyaluronidase, sea buckthorn oil, and rose oil were discovered among the medications that were "lying around."

And this is not the only case in which midlevel medical personnel not only fail to use but also willfully substitute medications, give someone the wrong injection, or sometimes simply falsify data about the administration of treatment. Thus, in Samarkand's oblast hospital, a case was noted in which a medicine was "administered" to a sick child for a week when the child was not even in the hospital at all. Forgery and upward distortions anywhere are a crime, but in a situation like this the crime is a double one.

Another frequent violation occurs with respect to the provision of free medications to children in the first year of life. Physicians at the Kalinin Sectional Hospital of the Khodzheyliy rayon of the Karakalpak ASSR, the Altyaryk and Fergana rayon hospitals, the Margilan pediatric polyclinic, and Tashkent's polyclinics nos. 1 and 19 wrote expensive medications off at full cost.

But nowhere has the abuse in the system of distributing medicines reached the scale that it has in the area of writing prescriptions. In the Samarkand oblast, every third prescription of the 331 checked was written without basis; 71 outpatient charts were not found, and 13 prescriptions turned out to be fabricated. In a sample check of 75 prescriptions in Karakalpak, it was discovered that drugs were not obtained in accordance with the law in 53 cases, and what is worse, a good half of the prescriptions were written for nonexistent individuals.

The republic's pharmaceutical administrations' sale of narcotics and products intended for medical use to outside organizations is a gross violation that borders on breaking the law. Pharmacy no. 4 in the Navoiy oblast sold the Kyzyltepin rayon consumer society 900 rubles worth of medications. These products were sold for 1,500 rubles at pharmacy no. 2 in the Fergana oblast administration Vodokanal.

The absence of control over the consumption, necessary accounting, and storage of narcotics has made conditions ripe for their theft. More than 1,600 ampules of narcotics were stolen by one of the senior nurses in the ophthalmologic department of the no. 1 clinic of the Tashkent State Medical Institute [TashMI]. Yangiera O. Kompaniyets, a nurse in the surgical department, was convicted of stealing narcotics. The Ministry of Internal Affairs [MVD] of Karakalpak initiated a criminal case against a physician from the Khodzheyliy TsRB who appropriated medications that were in short supply after he created artificial surpluses of the drugs and who then sold them.

All of this has been made possible by the low level of management on the part of the UzGAPU (headed by A. Sagatov) and the oblast pharmaceutical administrations, the Main Administration of Therapeutic and Prophylactic Assistance, and the Main administration of Therapeutic and Prophylactic Assistance to Children and Mothers of the UzSSR Ministry of Health.

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#### Team Contracts in Medicine

18400089 Moscow *EKONOMICHESKAYA GAZETA* in Russian No 40, Oct 87 p 11

[Article by L. Raykhlin: "Public Health-Concern of the State"]

[Abstract] A continuation of discussion of the CPSU Central Committee and USSR Council of Ministers project "Basic Reconstruction of Public Health Services in the 12th Five-year Plan and Up Until 2000" described the introduction of medical team contracts, introduced at Novosibirsk. The original plan included only sanitary engineers, carpenters and joiners but junior and middle medical personnel and domestic services personnel were included this year. In January 1987, complex and specialized (single-profession) team contracts, including administrative personnel, were established. The contracts included senior nurses and hospital matrons. The team contracts eliminated chronic personnel shortages. Economic incentives were impressive. Previously nurses and hospital attendants, working one and one half shifts with 4-5 days off per month received 140-160 rubles (or less). They now receive 190-220 rubles (or more) for working one shift while team leaders receive an additional 10 percent. Introduction of team contracts into



the pediatric polyclinic eliminated the acute nurse shortage, which was 50 percent below the norm. Now nine nurses handle the work for all 13 sections. Drivers are now included in the contracts. The clinic has the lowest child morbidity in the kray. A system of penalties for improper work levels fines on guilty persons. Interchangeability of personnel is the key factor in the success of work on team contracts. Now, 52 complex and specialized teams are operating in the kray (outside of Novosibirsk). The team contracts should become a permanent part of the public health system.

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### Medical Science Restructuring

18400088 Moscow SOTSIALISTICHESKAYA  
INDUSTRIYA in Russian 11 Oct 87 p 3

[Article by I. Mosin: "Public Health in the Focus of Science"]

[Abstract] L. Ilin, member of the USSR Academy of Medical Sciences, vice-president of the Academy of Medical Sciences, discussed, in an interview, the capacity of medical science to play a leading role in improving the health of the people, in creating fundamentally new methods of providing medical aid and in formulating and promoting a healthy life style and pointed out the need for radical reconstruction of medical science to help to achieve these goals. He cited the inadequate allocation of funds to the development of medical science and said that this situation is aggravated by the great increase in cost and sophistication of medical equipment. He emphasized the need to place priorities on main trends of research and focus special attention on them. Priority areas include mother and child care, bioengineering problems of organ and tissue transplants. He cited the need for increased international collaboration in medical science, procurement of foreign licenses and use of the achievements of foreign sciences. He discussed new ways of financing medical science and emphasized the importance of increasing major specialized centers similar to those now in existence: cardiology, surgery, oncology, mother and child care and eye microsurgery centers. He discussed problems related to selection of persons for graduate study and changes in the system of payment of medical workers. He described new age restrictions to be applied to Academy of Medical Sciences members. He emphasized the need to increase the responsibility of Medical Academy departments and touched upon some major difficulties related to the reconstruction of medical science.

02791

UDC 616-06-084

### Optimization of Practical Assistance to Health Service Establishments in Detection of Cancer Pathology

18400112a Moscow VOPROSY ONKOLOGII in  
Russian Vol 33, No 9, Sep 87 (manuscript received  
25 Mar 86) pp 64-70

[Article by Yu. S. Sidorenko, M.V. Katsman, G.A. Nerodo,  
E.A. Ayzenshtark and I. Yu. Gorin, Rostov Scientific  
Research Institute of Oncology, RSFSR Ministry of Health]

[Abstract] A "Day of Open Admission" was introduced by the Institute as a means of getting highly qualified medical assistance to the public at large. Massive screening should detect premalignant lesions but the yield is so low that it is economically unjustified. One of the reasons for this is that the participating physicians are not experts in the necessary field, but general practitioners. Introduction of computers, various systems and subsystems did not improve the situation. The concept of "increased risk" was then introduced to focus on a smaller screening population, but this too did not solve the problem for many reasons. A new idea was then tried: self selection for physical examination based on psychological "feelings" of an individual that something is wrong and one should see the physician. This had to be coupled with access to specialists in various fields without referral and without any specific symptoms. Thus, the "open days" were organized every other Saturday when anybody could come to the clinic for consultation and thorough examination. In three years 9227 examinations were performed, uncovering 373 cancers and 879 premalignant lesions; 76 percent of these patients were operable. The cost of detecting one cancer was 13.29 rubles versus 1600-1700 rubles in screening programs. References 2 (Russian).

7813/12913

UDC 616.1-07+616.1-084]-053.8

### Methods of Early Diagnosis and Prevention of Cardiovascular Diseases Among Able Bodied Population

18400113a Moscow SOVETSKAYA MEDITSINA in  
Russian No 10, Oct 87 (manuscript received 17 Jun 86)  
pp 52-55

[Article by Ye. M. Burtsev, A.A. Dzizinskiy, A.A. Fedotchenko, B.A. Chernyak, V.V. Shprakh, D.D. Molokov and M.B. Asner, Chair of Neuropathology and Neurosurgery (Chairman: Professor Ye. M. Burtsev) and Department of Therapy (Chairman: Professor A.A. Dzizinskiy), Irkutsk Institute for the Advanced Training of Physicians]

[Abstract] Two thousand seven hundred sixty five workers aged 20-60 years from the Baikal Cellulose-Paper Combine were subjected to an intensive examination and a 3-5 year follow up. The goal was to separate the sick individuals, the high-risk group and the healthy ones. This screening method identified 15 different groups among the study population: 4 of them manifested one type of clinical change and the remaining 11 groups exhibited a combination of changes. These changes are discussed in the body of the paper. It was concluded that increased examination of the population will invariably lead to increased revelation of various cardiovascular complications. Characteristics of the

hemodynamic reactions to physical loads and pharmacological probes can be used in early diagnosis of cardiovascular diseases as well as in selection of prophylactic measures.

7813/12913

UDC 616.12-008.331.1-084.3

**Screening—Dispensarization—of Patients With Hypertension in District Hospital**

18400113b Moscow SOVetskaya MEDITSINA in Russian No 10, Oct 87 (manuscript received 25 Nov 86) pp 56-57

[Article by S.V. Koibasnikov, Petrov District Hospital (Chief Physician S.V. Shcherbakov), Kalinin Oblast]

[Abstract] The distance from district [uchastok] hospitals, lack of specialists and technical equipment make mass health screening difficult. Under the aegis of annual screening the spread of arterial hypertension (AH) was studied in the rural population of Kalinin Oblast using determination of arterial pressure (AP). During seven months, 1164 individuals were studied. Borderline AH was noted in 131 individuals; they were examined twice a year. From this group, 69.7 percent submitted to the protocol, while the rest refused the therapeutic-prophylactic measures suggested. Of the 92 patients that followed the recommendations only 55.4 percent were doing it regularly; all showed a decrease in AP. One of the reasons for irregular visits to the clinic was the distance from their residences. As a result of this work, the diet of these individuals was altered, frequency of hypertensive crises was lowered and the ability to perform meaningful work was increased. Nevertheless, because 30.3 percent refused treatment, much more work is necessary in this area. References 2 (Russian).

7813/12913

UDC 616-002.5-053.2-084

**Effectiveness of Team Approach to Mass Screening of Children for Tuberculosis**

18400114a Tashkent MEDITSINSKIY ZHURNAL UZBEKISTANA in Russian No 7, Jul 87 (manuscript received 29 Dec 86) pp 19-21

[Article by R.I. Zakharova and Ye. B. Morozko, Scientific Research Institute of Tuberculosis imeni Akademichan UzSSR Academy of Sciences Sh. A. Alimov, UzSSR Ministry of Health]

[Abstract] The team [brigade] approach to examination of children was introduced in the UzSSR during 1975-1976 in Chirchik and recently it has been extended to other cities. Each team covers 6 schools and 15 preschool centers. Thanks to this, coverage of children with TB tests increased from 67.6 percent in '81 to 87.9 percent in '84-'85. Improved screening increased the levels of

primary TB infection (artifact) while the active tuberculosis level dropped by 32 percent. However, this occurred primarily in the cities. The rural population has not benefited from such a team approach as yet. To improve early diagnosis of TB it is necessary to improve prophylactic examinations of children using a team approach to massive screening which should include the rural population.

7813/12913

UDC 613.953

**Socio-Hygienic Study of Infant Morbidity During First Year of Life**

18400114b Tashkent MEDITSINSKIY ZHURNAL UZBEKISTANA in Russian No 7, Jul 87 (manuscript received 5 Aug 86) pp 16-19

[Article by R.A. Zakirov, Central Asian Medical Pediatric Institute]

[Abstract] A cohort study of Tashkent pediatric clinics was carried out in an attempt to develop recommendations for differential hospital care of infants during their first year of life. Observation units consisted of families with such infants. In all 400 families were selected. Total morbidity level was 4183.4 per thousand, slightly higher among the boys than girls. Respiratory organ problems were leading, followed by endocrine system disorders, nutritional and metabolic problems, those of the nervous and sensory systems. Analysis of the morbidity as a function of medical activity of the family showed that in medically aware families the morbidity was 1569.2 per thousand while in the other group it reached 6250 per thousand. The study group of 400 children was subdivided into four subgroups: healthy, attention required, risk and high risk children. During the first month they were examined about weekly except for the fourth group which required examinations every other day. In the next stage, 200 infants were split into healthy and sick groups and examined with varying frequency. This differential examination increased the detection rate of various diseases by 38.8 percent and lowered total morbidity from 4138.4 percent to 2191.3 percent. To improve this further, it is necessary to determine the level and structure of infant morbidity, to intensify sanitary-hygienic sophistication of the mothers and to introduce this scheme of differential examinations of the infants in clinics during their first year of life. References 3 (Russian).

7813/12913

UDC 618.2-055.28 + 616-053.31 + 612.648

**Characteristics of Fetus and Structure of Neonates of Multiparous Women**

18400114c Tashkent MEDITSINSKIY ZHURNAL UZBEKISTANA in Russian No 7, Jul 87 (manuscript received 11 May 85) pp 59-61

[Article by R.I. Stepanyants, Yu. Ye. Sitnikov and A.A. Bilmesova, Scientific Research Institute of Obstetrics and Gynecology, UzSSR Ministry of Health]

[Abstract] Multiparous women show a more complicated obstetrical and extragenital pathology, so that they can be considered a high risk for developing complications in delivery and in their offspring. However, data on the health status of such infants are scant. Three thousand children of multiparous women (5-14 births) and 1500 of women with 2-4 births were investigated (groups A and B respectively). Fetus hypoxia was found much more often in group A than B (7.5 vs 3.4 respectively), especially among mothers with anemia and toxocosis complications during pregnancy. Overall, group A offspring showed more frequent occurrences of hypoxia, asphyxia, hypotrophy and anomalous development. The umbilical chord was much longer in group A children leading to asphyxia. Body weight of group A children was higher. During the adaptation period, these children showed higher morbidity due to lower immunity. Therefore, children of multiparous women should be treated as high risk cases during the neonatal period and for the first year of their life. References: 2 Russian, 2 Western.

7813/12913

UDC 617-001-02:616.89-008.441.13

#### **Sociomedical Aspects of Alcoholic Trauma**

18400115a Moscow ORTOPEDIYA, TRAVMATOLOGIYA I PROTEZIROVANIYE in Russian No 8, Aug 87 (manuscript received 8 Oct 86) pp 60-61

[Article by I.M. Medvedev, Department of Traumatology, Orthopedics and Military Field Surgery (Chairman: Professor O.K. Sidorenkov), Arkhangelsk Medical Institute]

[Abstract] Injuries suffered during alcoholic intoxication were studied at the Central Arkhangelsk Hospital. Of 1476 cases observed, 20-25 percent were identified as results of alcoholic incapacitation. This trend appeared to be dropping in latter years. Some of the observed statistics: men showed nine times higher accident incidence than women; the majority of cases were in the age group 20-40 years old, 55.2 percent of the observed cases occurred in individuals employed by forestry departments; 80.5 percent of all cases required hospitalization (27.6 percent of these represented various bone fractures), 36 percent required lengthy hospital care. These data show that alcohol-related injuries constitute a serious physical, moral and economic burden on the society.

7813/12913

UDC 617-001-02:616.89-008.441.13:313.13

#### **Effect of Alcoholism on Non-Industrial Trauma in Large City**

18400115b Moscow ORTOPEDIYA, TRAVMATOLOGIYA I PROTEZIROVANIYE in Russian No 9, Sep 87 (manuscript received 8 Dec 86) pp 56-59

[Article by I.P. Durmanova, V.S. Fedosova and I.A. Russman, Sverdlovsk Institute of Traumatology and Orthopedics (Director: S.M. Kutepov) and Sverdlovsk Municipal Hospital No. 36]

[Abstract] Analysis of 2784 trauma cases in Sverdlovsk Hospital (aged 15 years and older) showed that alcoholism was the cause of 25 percent of all trauma. Most of the cases consist of individuals in the working age bracket. The injuries are rather serious: cranial injuries, multiple fractures, etc., requiring long hospitalization and frequently resulting in death. Many injuries to innocent people result from alcohol abuse (family members suffer most from this). Decreased use of alcohol lowered total numbers of trauma, especially serious injuries. It is believed that combatting alcoholism, along with development of sober life style, will go a long way to decrease alcohol-related injuries and mortality. References 10 (Russian).

7813/12913

UDC 617-001-056:83:656

#### **Road Transport Casualties of Individuals Intoxicated by Alcohol at Time of Accident**

18400115c Moscow ORTOPEDIYA, TRAVMATOLOGIYA I PROTEZIROVANIYE in Russian No 9, Sep 87 (manuscript received 19 Mar 87) pp 53-56

[Article by V.F. Trubnikov, L.D. Chernetskiy, G.P. Istomin, A.G. Cherkashin, A.Ye. Maryukhnich and I.F. Popov, Department of Orthopedics, Traumatology and Military Field Surgery (Chairman: Professor V.F. Trubnikov), Kharkov Medical Institute and GAI (unknown abbreviation) Administration (Director, Colonel L.D. Chernetskiy) Kharkov]

[Abstract] Special attention in road transport casualties (RTC) is paid to accidents due to drunk driving. Alcohol has a detrimental effect on the CNS, slowing response processes, sensory perceptions, coordination of motion, physical endurance and mental activity. Blood levels of alcohol were related to performance capability. Overall, 28.6 percent of RTC in the USSR are due to drunk driving (in the Ukraine it is somewhat lower: 20.6 percent), the total number of accidents increasing from 1981 to 1986. Alcohol-related accidents endanger the driver, the passengers and innocent bystanders crossing the street. Treatment of RTC is difficult due to the complexity and severity of the injuries. Specific cases involved cranial trauma, chest injuries and gastrointestinal damage. The task of keeping drunk drivers off the streets is not simple but can be done. References 4 (Russian).

7813/12913

UDC 616.24-002.5-078.73-053.6

#### **Characteristics of Early Detection of TB Among Juveniles**

18400116a Kazan KAZANSKIY MEDITSINSKIY ZHURNAL in Russian Vol 68, No 5, Sep-Oct 87 (manuscript received 22 Aug 86) pp 349-350

[Article by Z.L. Shulgina, Ye. Ya. Potapova, M.D. Gorbacheva and L.S. Ivanova, Chair of Tuberculosis (Chairperson: Professor Z.L. Shulgina), Saratov Order of Labor Red Banner Medical Institute]

[Abstract] Analysis of the age-related TB pattern showed that among children aged 12-14 years, the predominant form is primary TB; in older individuals (15-19 years old) secondary forms predominate (50 percent infiltrative, 25 percent focal). Some of these differences may be related to diagnostic techniques. Fluorography's effectiveness varies widely: children TB recognition level is 29.4 percent, among teenagers — 58.0 percent and

among adults — 76.4 percent. The opposite is found for the tuberculin test: children — 49.0 percent, teenagers — 4 percent and adults — 0 percent. Diagnostic techniques were suspected in the poor yield of this test among teenagers. Only qualified personnel should administer this test.

7813/12913



### **Soviet-Finnish Cooperation in Disposable Scalpel Production**

18400125 Moscow IZVESTIYA in Russian  
13 Nov 87 p 3

[Article by V. Shmyganovskiy: "A Disposable Scalpel"]

[Text] The Finnish association Khukhtamyaki, known for its supply of food-industry products, pharmaceutical equipment, medicines, and medical supplies to the Soviet Union, has offered the USSR Ministry of Health something new—machinery for producing disposable scalpel blades.

"Within the framework of scientific and technical cooperation between our countries," says Tarmo Salin, Khukhtamyaki's representative in Moscow, "two thousand sterile, disposable scalpels were manufactured initially. They underwent clinical tests in hospitals in the Soviet Union. It is expected that during the experimental period, 10 million blades will be manufactured for the USSR in Finland."

Disposable syringes, scalpels, and containers are used not out of "wastefulness," but because of sanitary and health-care requirements. To this day, the firm from the Polarkup association that "flooded" Moscow with cardboard and polymer containers during the 1980 Olympic Games is the top producer of disposable cups in Europe.

For a long time, unfortunately, we ignored these "trivialities." Even the scalpel, said USSR Minister of Health Ye. I. Chazov, is something that the surgeon himself must sharpen after two operations for the third.

What is the equipment's productivity?

"Even when it is operating at 80% of its capacity," answers Tarmo Salin, "it can produce 2.5 million blades a shift. This level of production can be achieved two and a half years after the start of the experimental period."

USSR Deputy Minister of Health V. V. Gromyko has reported that the Soviet side would be interested in the creation of a joint enterprise for manufacturing the scalpels, but Khukhtamyaki prefers to sell the machinery and the technology and train the personnel.

It is not surprising now that such things are being discussed and decided by the manufacturer and the purchaser. Maybe this absence of middlemen will clear the way more rapidly for disposable scalpels in our operating rooms.

13227

### **Czech Pharmaceutical Exhibit in Minsk**

18400092 Minsk SELSKAYA GAZETA in Russian  
29 Sep 87 p 3

[Article has no byline: "'Drugs From CzSSR' Exhibit in Minsk"; photo caption: Looking over the exhibit are Eduard Gayek, doctor of sciences and head of the division of clinical research and drug registration of the Lakhema Scientific-Research Institute; Galina Ivanova Tychina, chief of the department of standardization of the Belmedpreparaty Association; and Milan Shaygalik, department head from the Bioveta National Enterprise and doctor of veterinary science]

[Text] On the first day of operation, this specialized Czechoslovakian exhibit, which opened at the Belorussian Institute for the Advanced Training of Physicians on September 28, has already drawn a wide range of visitors. In the exhibit, the Spofa, Lakhema, Usol, and Bioveta national pharmaceutical enterprises of CzSSR are displaying their best products—drugs used in medicine and veterinary medicine.

Presented along with drugs already familiar in our country are a number of new medicinal preparations used for the treatment of cardiovascular disease and thromboses, asthma, and rheumatism, as well as psychotropic, antimycotic, and antineoplastic agents and cytostatics. No less interesting is another exhibit section devoted to therapeutic agents as well as to various vaccines and sera used in veterinary practice.

"According to an agreement with the USSR Ministry of Health and Gosagroprom," Iozef Gerel, the director of the exhibit and a representative of the foreign trade society Khemapol Praga, reported to a BELTA correspondent in an interview, "Khemapol Praga, which is the sole exporter and importer of pharmaceutical products in Czechoslovakia, organizes such traditional exhibits every year in one of the union republics.

"Now, when the pharmaceutical industry of each country is manufacturing a multitude of different medicinal preparations, it is imperative, in our opinion, that medical workers—especially our Soviet colleagues—take the opportunity to become familiar with them, because a large part of our export is to the USSR. Every year, we ship a total of 80 million rubles worth of pharmaceutical products to your country, a considerable number of the shipments going specifically to Belorussia. At the same time, Czechoslovakia purchases tens of millions of rubles worth of drugs in the USSR. "The development of economic cooperation between the CzSSR and the Soviet Union in the pharmaceutical industry show favorable new promise," the exhibit director emphasized. "Bilateral agreements recently concluded between our countries call for a considerable increase in the exchange of drugs in the near future. Cooperation in the area of scientific research, as well as in the development and production of promising drugs, is expanding."

The exhibit will be open until October 3. It includes a symposium that will feature leading Czechoslovakian scientists and pharmaceutical specialists.

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